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## THE RECOGNITION AND TREATMENT OF DIFFICULT LABOUR.[1]

By F. L. WALL, M.C., M.B., B.S. (Adelaide),
*Adelaide.*

MY only excuse for accepting the invitation from the Scientific Subcommittee to read a paper is the thought that length of service may have enabled me to treat the subject of difficult labour from a general practitioner's standpoint.

No general practitioner should undertake the task of handling thoroughly such a specialized subject; and in particular does this apply to one lacking two things, namely, the privilege of an obstetrical hospital appointment and the experience of any special post-graduate work in this subject. You will pardon, therefore, any unfamiliarity of mine with scientific terms and phrases, which would slip trippingly off the tongues of you specialists. My approach to the subject will be entirely "general practitionerish" and my terms often merely colloquial. Accordingly, let us start by declaring that difficult labour is our named enemy.

Obstetrics is an art in which strategy plays no small part. We must be in charge of the situation, or have the feeling that we are in charge, and must be in the position to take the initiative when unexpected difficulties arise. Better still, we must be so well informed of the situation that unexpected difficulties only seldom arise.

To continue our military metaphor, reconnaissance must be early, vigilant and sustained.

The early treatment of a possibly difficult labour may begin when we first see our patient, say at six or eight weeks of pregnancy. Here I would like to emphasize the importance of the psychological handling of the pregnant woman at the first interview. A timid, frightened, nervous patient is a possible candidate for power abnormalities. Eliminate her fears as much as possible. Encourage and reassure her. Try to inspire rather than to coerce her. This first examination should include a vaginal examination, and pelvic and uterine abnormalities, such as ovarian cysts, fibroids, pelvic deformity or small size should be recognized.

### The Thirty-Two Weeks' Examination.

Our next main reconnaissance will take place during the visit of the patient at thirty-two weeks' gestation. At this stage you detect the small or deformed pelvis. In all *primiparæ* I carry out external pelvimetry, and in suspicious circumstances some internal pelvimetry as well. These external measurements are not truly indicative of the type of pelvis present; but obvious variations in them will warn us of the necessity for internal pelvimetry or X-ray examination. The rough estimate of the diagonal conjugate was made during the vaginal examination of the first interview. Ability to reach the sacral promontory with the middle finger is a

[1] Read at a meeting of the South Australian Branch of the British Medical Association on February 29, 1940.

warning. If the external conjugate is less than 18 centimetres or if I am able to span the interspinous distance, then I look for trouble.

*Abdominal Palpation.*

Abdominal palpation may be difficult on account of some of the following, namely, thick maternal abdominal walls, rigid recti, full bladder, extended legs in a breech case, the feet obscuring the upper pole. A point which I find useful when deciding whether a head or a breech occupies the north pole of the uterus is this: in either case a groove will be felt—the nuchal groove or the groin groove. The groin groove is situated nearer the buttock convexity of the fœtus than is the nuchal groove to the cephalic convexity, and the groin groove is more in the axis of the fœtus. The site of the fœtal heart sounds has misled me. I can think of several breech cases in which the heart sounds were located between the navel and the anterior superior spine.

At the thirty-two weeks' examination the only treatment carried out is to rectify a breech position. I do external version without anæsthesia and instruct the patient to return in two weeks' time.

**Reconnaissance at Thirty-Six Weeks.**

At thirty-six weeks we reconsider breech cases and detect cases of possible disproportion and decide what to do with them. As a result of experience in my own practice, disproportion is not at all a common condition. In Australia, where fresh food and sunlight are so abundant, rickets is a rare disease, at all events as regards the pelvis. Immigrants supply us with a few cases.

*Estimation of Disproportion.*

I attempt to estimate disproportion by making the head fit into the brim without using an anæsthetic. If the head is floating freely above the brim, grip it with the fingers and thumb of the left hand and press it downwards and backwards. Hold it there and place the right hand, with fingers extended and pointing vertically downwards, in the lower part of the abdomen and press backwards and downwards on the projecting fœtal head. If the head is partly engaged, then apply the extended fingers of both hands on the head in the axis of the pelvis, and continue pushing with the motion of sliding the fingers upwards and downwards. These manœuvres will give one of the following findings: (*a*) If the fingers can slide between the head and the posterior surface of the pubes, there is "ample room". (*b*) If the head will engage but the finger tips cannot press between the head and the *symphysis pubis*, there is a "tight fit". (*c*) If the finger tips impinge on the top of the *symphysis pubis*, slight disproportion is present. (*d*) If the head overlaps the pubis, marked disproportion is present.

Munro Kerr's method with the left hand pushing down and the right in the vagina may be used as well, if necessary under an anæsthetic.

**The Treatment of Disproportion.**

Treatment to be followed in the presence of disproportion is as follows:

1. If there is marked disproportion, note the patient for premeditated Cæsarean section at or before full term.
2. If slight disproportion is present, induce labour at once or in a week's time.
3. If there is a "tight fit", induce labour at thirty-eight weeks or allow the pregnancy to go on to term and have a trial of labour.

*Trial of Labour.*

A trial of labour aims at avoiding an unnecessary Cæsarean section and at delivering a live baby. It must be undertaken only in such circumstances that, should conditions dictate, a Cæsarean section (if necessary a lower segment one) can be done at once. The hospital should be unimpeachable, and the attendant capable of doing a lower Cæsarean section. I let labour go on, giving sedatives if necessary, for up to twelve hours, including two hours of the second stage if the forces are acting fairly normally. Often the head will become well engaged, so labour is allowed to proceed; but if engagement has not taken place, do a Cæsarean section. No vaginal examinations whatsoever must be made. Rupture of the membranes with non-engagement of the head is a certain indication for the necessity of Cæsarean section. With inert type of pains, if you are in doubt, do a Cæsarean section early. Never let labour go until the uterus becomes exhausted in any degree. How long to wait cannot be stated in hours; neither can indications for trial of labour be given in inches or centimetres. This department of obstetrics calls for the judgement begotten of experience. As a result of my own small experience I can say that in quite a few cases anxiety regarding misfit has given way to happy surprise when labour went along normally. So much depends on the powers, and these we cannot foretell. Elderly *primiparæ*, who have been married for some long time, deserve the leniency and certainty which a premeditated Cæsarean section can give. This especially applies if other abnormalities coexist—for example, slight toxæmia or known malpresentation. I always think that a middle-aged *primipara* who has suffered from dyspareunia is deserving of a Cæsarean section if doubt exists about disproportion. Remember also how slow to undergo moulding is the over-mature head. Post-maturity can be a matter of great difficulty; therefore beware in all such cases. Excluding patients set aside for Cæsarean section or for trial of labour, we have the third group in which it is decided to induce labour.

*Induction of Labour.*

Before inducing labour you must be very sure that the baby can be born *per vias naturales*; otherwise you may let the patient in for a most hazardous Cæsarean section. Remember also that your patient may not come into labour for six to seven days

from the time at which you start to attempt induction.

Induction cannot be undertaken before the thirty-sixth week without grave risk to the baby. If forceps have to be used before the thirty-sixth week, the risk rate rises to about 25% for the child. I would favour induction for some cases judged by the authorities as suitable for trial of labour. Trial of labour is a procedure which, only on rare occasions, can be fitted into the life of a busy general practitioner. The thirty-eighth week seems to be a good time to start in most cases.

*Methods of Induction of Labour.*

*Medical Induction.*—In a medical induction one ounce of castor oil is given; this is followed in an hour by ten grains of quinine. One hour later the patient is given an enema followed by a hot bath, and after another hour a second dose of ten grains of quinine is given. Quinine seems to act better when given as a mixture than when given as pills. If there is no result in forty-eight hours, repeat the procedure in detail, and this time follow in four to six hours with two minims of pituitrin every hour for four doses. If there is no result after the second medical treatment, then tubal induction should be carried out.

*Tubal Induction.*—If very carefully undertaken, tubal induction proved in my cases to entail little risk of infection to the uterus. One of my tubal inductions was carried out in grossly dirty surroundings. All gloves and instruments were taken ready sterilized, and neither these nor the patient's genitalia were touched except by my assistant or myself. Tubal induction can be quite difficult in certain *primiparæ*, and it is advisable to carry out this procedure for the first time on a *multipara*. After external cleansing of the skin and vulva I swab the vagina well with sterile gauze soaked in 2% mercurochrome solution. After bringing the cervix into view I apply more mercurochrome to the upper portion of the vagina, cervix and cervical canal. The cervix will be very soft and will tear or abrade and bleed with the slightest provocation. Therefore, instead of using tenacula, I catch the anterior lip with a good pair of ring forceps. This is an important detail in technique. The anterior lip being held steady, the right index or, more often, the middle finger is passed up and gently separates the membranes as far as possible from the lower uterine segment. The tube I use is a rectal tube of not too firm consistence. It is most carefully guided into the cervix with a packing forceps and is then rotated so as to coil up between the membranes and the cervix. A little gauze soaked in mercurochrome is placed in the cervix and the upper part of the vagina to keep the tube from slipping out. Labour will generally start in twenty-four hours, though it may take forty-eight. If it has not started at the end of twenty-four hours, remove the tube and gauze. The observations and decisions made on our cases up to this point should enable us now to look forward to the labour with a reasonable degree of complacency. Nevertheless only too many delays and difficulties of labour may yet confront us—delays and difficulties caused by anomalies or faults of the powers of the passages or of the passenger, or by combinations of these faults.

**Faults in the Powers.**

Power faults in the early stages of labour cause the doctor more time wastage and the mother more anxiety than any of the other faults. You have probably all encountered what I call the "hesitant uterus", when the woman has regular pains recurring at night only for a variable time up to three weeks, or colicky pains occurring both night and day for a few days, before the onset of labour. These usually cause unnecessary trips to the maternity hospital. Others start off in labour in a manner which earns the title "true primary uterine inertia".

*Primary Uterine Inertia.*—In primary uterine inertia the pains, unlike the usual crescendo type of normal labour pains, are irregular in time incidence, duration and intensity. This is the "incompetent or sluggish uterus". The fœtus may be carried for some time over 280 days. This we call the "unpunctual uterus". The over-anxious or frightened type of person most frequently suffers from the disabilities of the powers. I think that a well-balanced kind of woman generally possesses a uterus of good function during labour, and a frightened non-confident person is most prone to encounter the above disabilities. This type of disability may be an accompaniment of civilization. Mrs. Daisy Bates, in answer to a direct inquiry, states that she has never encountered one difficult labour amongst the Australian aborigines. Parturition with them is a perfectly simple painless matter, which she ascribes in part at least to their practice of vulvotomy in young girls.

The recognition of primary uterine inertia is easy. The presence of the serious condition of secondary inertia or exhaustion must be ruled out. We must make sure that there is no obstruction to labour and that the mother's temperature, pulse and respiration are not seriously affected, that the baby is all right, and that the uterus really does contract and relax and that the abdomen is not tender. Sedatives are then given until the type of pains changes, and this generally happens. Bowels and bladder are kept from distending and nourishment and sedatives are given. Morphine is invaluable and may be given every twenty-four hours. Gas and oxygen analgesia is helpful and, when the os is fully dilated, deliver the patient if necessary. The condition may pass into a state of secondary uterine inertia. Primary uterine inertia was the great bugbear of obstetrics when patients were attended in their own homes under the guidance (or misguidance) of untrained "gamps", who sent for the doctor many times too often with the plea, stated in the presence of the patient and relatives: "Can't something be done?" As a young inexperienced man I found this very hard to endure.

The following specific treatment may be tried when sedatives alone fail. Œstrin injections, acetylcholine, quinine sulphate, five grains (one dose), or atropine. Others use pituitary extract, but I would fear to use this until at least nearly full dilatation was present. In cases in which uterine inertia has been present, I make it a rule in subsequent pregnancies to give quinine sulphate, one and a half grains, twice a day for the last two weeks of gestation, and I have had some good results. I have tried no other specific form of treatment.

*Prolonged Labour.*—Prolonged labour is of interest. My late partner, the late Dr. C. T. Cooper, had experience of a *multipara* whose os reached one-third dilatation and then the contractions slackened off for no apparent reason. He gave one cubic centimetre of pituitrin and waited an hour, but no pain came. That woman did not have another pain for three weeks, when the labour recommenced and terminated quickly and normally.

*Secondary Uterine Inertia.*—Secondary uterine inertia is the name applied to an exhausted uterus, in which, during the second stage of labour, the pains, that at first were strong, gradually fade away and the uterus becomes soft and flabby. Treatment is to give hypnotics and effect delivery if you can as soon as pains recommence.

As an occasional power defect may be mentioned attenuation of the abdominal walls and uterine obliquity.

*Internal Contraction Ring.*—In some irritable uteri localized spasm of certain circular muscle fibres of the lower segment will give rise to an internal contraction ring. There may be no obstructive influence present, though an abnormal presentation will predispose to the condition. Exciting causes may be the injudicious use of pituitrin or too early interference with forceps.

The diagnosis is made by the fact that the patient is not exhausted and that contractions and relaxations are taking place, but during a pain the presenting part, instead of advancing, will be felt to retreat. Frankly, I have never clinically recognized a case of my own. Probably cases have occurred in my practice, but they have rectified themselves with morphine. Under this heading must come the cases of "failed forceps" in which delivery has become easy after a few hours' interval. Dr. C. T. Cooper told me of cases in which he had failed and then had been beaten by a "B.B.A." Second-hand information tells me of a case which occurred to a couple of my fellow practitioners. They had both tried forceps unsuccessfully and had decided to do Cæsarean section, but were saved the trouble by the birth of the baby in the ambulance *en route* to hospital.

The treatment of internal contraction ring is easy if once it is diagnosed. To make the diagnosis you will probably have to insert the whole hand into the uterus while the patient is under deep anæsthesia. Give morphine and wait until descent of the presenting part takes place, then deliver the fœtus. Others advise the application of forceps, then the giving of an inhalation of amyl nitrite and delivery as soon as relaxation of the spasm takes place, which, it is said, occurs very rapidly.

*Hour-Glass Contraction of the Uterus.*—Should localized spasm occur in the third stage of labour it is called hour-glass contraction of the uterus. Of this you will all have had cases. My experience has been of cases in which the placenta was not delivered and in which, on account of bleeding, I have introduced the hand, to find a large lower compartment communicating by a narrow entrance with a smaller dome-like upper compartment, to which the placenta was adherent, and projecting through the constriction. I have always been able to empty the upper dome completely by peeling off the placenta with my finger tips, aided by downward pressure on the abdomen.

*Tonic Uterine Contraction.*—I now enter territory made familiar to me only by the text-books, namely, tonic uterine contraction. It is a severe generalized spasm or tetanus of the uterus, in fact a "frenzied uterus", for it is indeed a terminal state for both mother and babe if not quickly treated. The uterus finds that it cannot hope to expel the child, so it holds on with one long grasping effort. This, of course, kills the baby in a few minutes. It occurs only in obstructed labour.

Fortunately I have never experienced this condition, nor have I ever sent a failed delivery case to the Queen's Home.

In tonic uterine contraction the mother is a very distressed and ill woman. Her pulse is rapid, her temperature is elevated, and she has an anxious look. Her abdomen is rigid and tender, and the uterus moulded to the baby. A ring may be felt at the junction of the upper thick contracted uterine segment and the lower thinned-out segment; this is Bandl's retraction ring.

If the patient is left alone, rupture of the uterus will occur. Give morphine, and under deep anæsthesia crush and/or dismember the fœtus and deliver it. Otherwise do a lower segment Cæsarean section and hope for the best.

### Obstructed Labour.

I shall merely mention obstructed labour, as I have never encountered it. The usual causes are: internal contraction ring; contracted pelvis; obstruction due to tumours, such as ovarian cysts, fibroids or growths of the pelvic bones; oversize of the fœtus, or hydrocephalus, or a malformed fœtus; neglected transverse positions, or mento-posterior positions in face presentations; brow presentations; impacted occipito-posterior positions or other positions associated with a contracted pelvis.

Of the extrinsic obstetric enemies to normal labour I shall mention only ovarian cysts and uterine fibroids, both of which conditions should be detected during the first visit at six to eight weeks of pregnancy. Our subsequent action should entirely obviate any trouble during labour.

An ovarian cyst should be removed as soon as detected, the exceptions being cases of bilaterality or occurrence in elderly *primiparæ*, when it is right to await viability of the fœtus, and then to perform Cæsarean section and ovariotomy.

Fibroids, in my experience, have often given no obstructive trouble at all, even when of large size. They must be watched from time to time and their obstructive tendency assessed. It is often wise to remove cervical fibroids at about four months of pregnancy and to follow the operation by morphine narcosis for three days. Here again elderly *primiparæ* are allowed to reach the stage of viability of the fœtus, when Cæsarean section with myomectomy or hysterectomy is performed. In treating these cases surgically, never lose sight of the fact that, however deformed it may be, this uterus has been able to conceive. Give it its chance of carrying its child to maturity, as this may be its only chance.

Of other abnormalities of the passages, two further conditions may be mentioned. One is elongation and œdema of the anterior lip in a *multipara*. This I have encountered several times, and the treatment is to push it up over the occiput during a pain until it is taken up completely. The other is an interesting condition which I have seen on one occasion.

The patient was a *primipara* of Dr. C. T. Cooper's. When demonstrated to me, the lower uterine segment was thinned out over the presenting head and it felt like a tough bag of waters; but no membranes could be seen. A bead of mucus was detected leaking from a very small hole about two millimetres in diameter. Dr. Rupert Magarey performed a vaginal Cæsarean section with success to the mother and the child.

Finally, as a passage defect, a rigid pelvic floor and perineum may delay delivery for many hours. Anæsthesia and forceps are required, with or without episiotomy.

### Abnormalities Associated with the Baby as a Cause of Difficult Labour.

#### *Oversize and Postmaturity.*

Oversize and postmaturity are potent causes of trouble. Dr. de Lee advises induction of labour in all cases when he is certain that the woman is seven days over her time. Many of our difficult persistent occipito-posterior presentations are in post-mature babies; our difficult breech presentations too. Do not expect normal moulding in a baby definitely seven to fourteen days post-mature.

#### *Persistent Occipito-Posterior Presentations.*

Persistent occipito-posterior presentations are fairly common in general practice. My management consists in trying to diagnose this position early in labour. The back is hard to find or appears to be absent when palpation is carried out, and the anterior shoulder is located very far back. I would refer my listeners to Dr. J. R. Beard's excellent work on this subject, study of which will stimulate us to make more accurate observations in our cases. His view is that there are two occipito-posterior positions: an intermediate one on each side, in which some back and the anterior shoulder can still be felt on one side or the other, and in which type the occiput is in front of a point three-quarters of an inch to the sacro-iliac joint. Then there is the true occipito-posterior position, in which the back is not clearly palpable. He contends that in the true occipito-posterior presentation the fœtus cannot rotate forwards, but that in the intermediate presentations it can.

We leave these cases severely alone during the first stage unless the membranes rupture, when we make a careful vaginal examination. Sedatives are necessary. My constant aim is not to over-drug the patient. My routine is to give one-sixth of a grain of morphine and one one-hundred-and-fiftieth of a grain of scopolamine when the pains become strong. Repeat the scopolamine in doses of one four-hundred-and-fiftieth of a grain every two hours for a maximum of four doses. When the effect of this tends to wear off, I start the woman on self-administered nitrous oxide and oxygen (90% and 10%). Provided you spend half an hour with the patient, seeing that the machine works, that the face-mask fits accurately and that the patient loses her initial fear of the whizzy sensation produced in the head, then it will be of great help to her. The nurses must know how to adjust the percentage of gas and how to change over cylinders, but very few do. When you think that the os is about fully dilated, make a careful vaginal examination. If the os is fully dilated and the baby's and mother's conditions are satisfactory, labour may be allowed to proceed for three to six hours, but otherwise deliver the patient at once.

The patient must be well anæsthetized and lying on her left side, with her knees drawn up and her body practically across the bed, with her buttocks overhanging the edge. With the woman in this position the right forefingers make a vaginal examination, and if you encounter a *caput succedaneum*, as you generally do, then try to feel an ear. If unable to do so, then withdraw the right fingers and proceed gently to insert into the vagina the whole of the left hand, well lubricated with ethereal soap. Verify the position of the occiput by spreading out the fingers and the hand and by palpating the ear. Beware of a folded-over ear. Flatten it out and then make sure of its relationship to the external auditory meatus. Next, between pains and under deep anæsthesia, push up the head and feel for the uppermost shoulder. Place your thumb on the clavicle and fingers up over the back of the shoulder and thus rotate the body of the infant until its back is facing the mother's pubes. Then ask a nurse to press firmly on the fundus, whilst you slowly withdraw your hand, keeping the finger tips in apposition with the head. You are now in the position for the application of forceps. This is done and the baby is slowly delivered during pains; an episiotomy is done if necessary. In a difficult forceps case, when considerable traction is necessary, I would suggest that the doctor place his foot, carefully wrapped in a towel, against the lower buttock of the patient, the purpose of this being not so much to increase the force as to direct

and control it more advantageously. Difficulties arise with early rupture of the membranes, the uterus holding the baby firmly and the head fitting tightly in the pelvic cavity. In these cases deep anæsthesia is required, and if you are unable to rotate the shoulders, then you must rotate the head and apply forceps and deliver the patient. I always rotate the shoulders. In a certain number of easy cases patients have delivered themselves for me with the face of the fœtus to the pubes.

*Face Presentations.*

Only two face presentations have fallen to my lot.

In the first case, that of a *multipara*, after making the diagnosis by vaginal examination, I pushed up the face and pulled down a leg, delivering the fœtus as in a breech presentation.

The other delivery was much more difficult.

It was a post-mature second baby, which we had turned from a breech presentation some weeks before. This case is of interest as the woman had aborted twice, and in this pregnancy she was given injections of "Antuitrin S". She also suffered from renal glycosuria. Early rupture of the membranes, strong pains and no descent of the head made me examine her *per vaginam*, to find a face presentation just engaged in the pelvic brim. After consultation with Dr. Rupert Magarey it was decided to give one-quarter of a grain of morphine and one one-hundred-and-fiftieth of a grain of scopolamine. After six hours the head had descended into the hollow of the sacrum, so I applied forceps and delivered the fœtus after doing an episiotomy. This head was a very tight fit, but it was fortunately lying with the chin anteriorly.

The outlook is much better in the mento-anterior cases. In mento-posterior cases the patients either obtain relief by rotation of the fœtal chin through three-eighths of a circle, or else the chin lies in the lower part of the sacral hollow and then becomes impacted. It is impossible, if the mother and fœtus are of average size, to deliver these fœtuses with the chin posterior. Manual rotation and forceps delivery are necessary. In face presentations, when definite disproportion exists, the ideal is early recognition and Cæsarean section. If the condition is recognized early and no disproportion exists, we are advised to produce flexion of the baby's spine by pressing in its chest with one hand and the occiput with the other, and so to convert the presentation to a vertex. Otherwise do as was done in this case. In making a vaginal examination be careful not to damage the eyes, as each may at first feel like the mouth. The nose, however, will always be made out by touch. After delivery the head looks a frightful sight, like a large tomato, and orbits and chin are scarcely recognizable.

*Brow Presentation.*

Brow presentation is very rare and has not come my way as yet. A brow presentation is generally transformed spontaneously into a face or vertex presentation. If disproportion is the cause, early detection and Cæsarean section are ideal. If there is no disproportion, try to convert the presentation into a face or vertex presentation, or if the uterus is not in a state of tonic contraction, bring down a leg and deliver the fœtus as a breech. Should this method fail, apply forceps and try to effect delivery. Finally, craniotomy would be necessary if all these methods failed.

*Transverse and Shoulder Presentations.*

I have partly encountered a transverse and shoulder presentation (that is, during actual labour).

The case was one of Dr. C. T. Cooper's; it was an eight months' gestation and the child was the third. The membranes had ruptured, and without examining carefully I gave one cubic centimetre of pituitrin. Dr. Cooper called two hours later and delivered a dead baby, shoulder presentation. That was in 1922, and since then I never give pituitrin without the greatest circumspection.

Transverse presentations may be noted at the thirty-sixth week and should be immediately rectified by external manipulation. I have done this. Others become corrected spontaneously in the later weeks of pregnancy or during the early stages of labour.

If a transverse and shoulder presentation is encountered early in labour and there are other indications, for example, a probable disproportion, do a Cæsarean section. Otherwise try external version to a vertex presentation. If this fails and the membranes have ruptured, two alternatives are left: (*a*) a risky Cæsarean section or (*b*) internal podalic version if sufficient *liquor amnii* is present and if the uterus is relaxing between pains. Should the uterus be in a state of tonic contraction or bordering on that state, decapitation is necessary.

*Breech Presentations.*

Having confessed to my error in giving pituitrin in a case of shoulder presentation, I feel constrained to give you a little more of my personal history to show how a general practitioner has by his mistakes to learn the facts about difficult labour. In 1920 I undertook Dr. C. T. Cooper's practice for four months. He was then attending over 350 confinements *per annum*. During my locum tenency I attended 96. It was rather like being taught to swim by sudden immersion in the North Sea.

The first case which my mind well recollects was a breech with a double footling presentation. At that time in my life I knew much more about the mechanism of a Lewis machine gun than I did about breech deliveries. The baby I delivered was dead and I felt very depressed about it—more so than did the mother.

When faced with my next breech case, I did what I advise all young practitioners to do if worried—I called in a consultant, namely, the late Dr. A. A. Lendon, at that time our lecturer in obstetrics. I can picture him now, sitting at the head of the bed, giving the anæsthetic and obstinately refusing to conduct the delivery on account of a fictitious attack of lumbago. The next incident I remember was when the buttocks started to bulge the perineum. Dr. Lendon then made me leave the room and smoke a cigarette. How vividly that has impressed upon me the fact that there should be no undue haste in commencing a breech delivery! Following instructions step by step, I was able to deliver a *primipara* of a seven-pound baby without causing any perineal lacerations. That was a big step forward.

The next breech that I remember distinctly was in a *multipara*. The child was very large and I had trouble with the aftercoming head. In reintroducing my fingers

I slipped two fingers into the mother's rectum—quite an easy thing to do in the excitement of the moment. Having no spare gloves, I merely washed perfunctorily. The baby was stillborn and the mother developed a pelvic abscess, which was later drained successfully in the Da Costa ward at the Adelaide Hospital.

Having by this time entered into partnership with the late Dr. C. T. Cooper, I soon learned that he was a perfect wizard at breech deliveries. He delivered several of my patients for me, but one of his own cases I shall never forget.

It was the one case in which he actually anticipated trouble and asked me to give an anæsthetic for him. When the child was at last delivered I was astounded to find that all its ribs seemed cracked. The sternum was adrift from the ribs, somewhat like a piece of post-mortem surgery. However, we wrapped the baby in cotton wool and bandages, the fractures firmed and the child never turned a hair.

Of later years I have had to deliver a fair number of *primiparæ* of babies presenting by the breech with extended legs, and I propose to give you a description of this in some detail. Before leaving these remarks on personal experiences, however, may I recommend to the younger men a practice found most useful, namely, after meeting any abnormality whatsoever, read it up as fully as possible in your reference books as soon as you get back home. The night hours are excellent for this and I always do it. Have a good set of reference books and keep them up to date.

*Delivery of a Difficult Breech.*

So far I have mentioned the following treatment in connexion with breech cases:

1. Most breeches have been turned into head presentations between the thirty-second and the thirty-seventh week.

2. Of the remainder, labour will be induced in some at the thirty-seventh to the thirty-eighth week on account of suspected slight disproportion.

3. Some elderly *primigravidæ* with breech presentations in which the legs are extended have been marked down for Cæsarean section, special consideration being given to cases in which other disabilities are present as well. (As an example, I did a Cæsarean section for a *primigravida* of thirty-eight years with a breech presentation, both fœtal legs being extended; she had been married for fifteen years and had marked dyspareunia.)

4. The rest of the patients are allowed to go into spontaneous labour. From these we shall choose a young *primipara* of medium build, with a breech and with both fœtal legs extended, the baby weighing about eight pounds; and we shall follow out her treatment in detail. Avoid deep narcosis. If necessary, give one-sixth of a grain of morphine with or without one one-hundred-and-fiftieth of a grain of scopolamine, and let the patient use a nitrous oxide and oxygen machine, which will give self-administered obstetrical analgesia. Requirements will include instruments for sewing up the perineum, for example, needle-holder, needles, number 2 chromicized catgut, silkworm gut, tissue forceps, two Rutherford Morrison's forceps, midwifery forceps and two pairs of Stirling rubber gloves.

I specify Stirling gloves, as they are firmer and less rough than some other makes, and are, when well lubricated, ideal for intrauterine manipulations.

The bed must be firm, and of a suitable height, and so arranged that a good light shines over one's shoulder. (I like a bed two feet two inches high.)

First consider the arrest of a breech at the pelvic brim. This is like a trial of labour for a cephalic presentation. If the patient is a *primipara* and labour has not advanced, if she has not been infected and has not been examined *per vaginam* more than once, then lower segment Cæsarean section may be advised. Otherwise labour goes on and we must deliver her. The patient's bladder is catheterized and she is placed in the cross-bed position on her back with each of her legs held up by a nurse. The anæsthetist gets her well anæsthetized. (Let it be understood that only very few breeches with extended legs become arrested at the brim. Many will come down till the buttocks distend the perineum, and most will get well down the pelvic canal.) Next do an episiotomy, a right lateral one, and make it thorough; or a bilateral episiotomy may be preferred. In making internal manipulations, first lubricate the gloved hand well with ethereal soap, next take up a comfortable stance on a good broad base. Remember that if your forearm wanders from the axis of the pelvis during manipulations, you are very apt to do extra damage to the perineum. You will find it of great assistance, therefore, to have your free hand steadying your working elbow. Insert your hand and make sure that the os is quite fully dilated. Pass it up the ventral aspect of the fœtus until the finger tips reach the popliteal space of the anterior leg. Press the thigh outwards and hope that this will cause the knee to flex. In many tight fits this will not happen, and you will save energy by going straight for a foot and bringing it down and out by a sweeping movement towards the other side of the fœtal trunk. Do you proceed now or wait? Hurrying up the delivery in an easy breech case will assuredly cause the extension of the arms which would be avoided by a slow and gradual delivery. In a tight fit the arms will be extended above the head whether or not. It is wrong to give the uterus too much time in which to contract rigidly around the fœtus. The membranes, of course, will have ruptured and most of the remaining water will escape during the first intrauterine manipulation, and from then on the uterus will be rather irritable, even fierce. Only slight relaxations will take place. It is during these relaxations that we have the opportunity of making a deliberate and careful entry. Pushing too hard on the fundus from above compresses the placenta against the head and thereby affects the fœtal blood supply. The tenor of the delivery should be a combination of gentle pressure from above with the release of successive parts of the fœtus from

the birth canal. The late Dr. C. T. Cooper, my ideal at breech delivery, made his movements almost continuously when once started, and he always used very gentle traction.

Having brought down one leg, do you go ahead or wait? If the mother and baby are in good condition and the fœtus continues to descend with the pains, wait until the first buttock is on the perineum, then bring down the other leg. Otherwise, if there is need for speedy delivery, as indicated by prolapse of the cord or marked slowing of the fœtal pulse rate, bring down another leg at once. This is what you will generally do. Now we have both legs out and the baby is born as far as the buttocks. Wrap the exposed parts in a warm moist towel which is renewed at intervals, and try to aid expulsion by gentle pressure on the fundus during pains until the navel comes into view. From this point onwards speed and accuracy of action are required.

If you know you have a fat baby and it is a tight fit, I would advise you to go for the arms at a point of time earlier than is usually taught. That is, do not wait, say, until a nipple is visible, but go on sooner, in fact before the fœtal parts become tightly wedged together in the brim of the pelvis. Books advise you to push the fœtus up to ease this impaction; but I ask you whether it is possible to dislodge this tight-fitting fœtus from the grip of the, by now, enraged uterus. Attack the posterior arm first. Use the hand which corresponds to the baby's arm and creep up the back of the posterior shoulder until the elbow is reached, and then sweep the arm downwards across the baby's face. If the parts are fitting very tightly, I think you will have to go straight for the hand. Next deliver the anterior shoulder after rotating it towards the hollow of the sacrum, if that is possible. The method of helping the posterior shoulder to sink into the hollow of the sacrum by lifting the fœtus by the feet upwards and towards the mother's belly is not practicable unless the scapula is in view—that is, without breaking the baby's neck. In these difficult cases this monœuvre is out of the question. Dorsal displacement of the arm will require rotation of the trunk so that the face moves towards the displaced arm. Then proceed as usual.

*The Aftercoming Head.*—Several grips and manipulations are taught for the delivery of the head, but I always use forceps at once instead of wasting time trying other methods unsuccessfully and finishing up with forceps. Why not use forceps first in all cases? I grant that it is sometimes not easy to apply them in a "tight-fit" case; but why not practise on the easy cases in order to become expert at the hard ones too?

The head is very gently pushed down from above all the time, and it cannot take more than twenty seconds to apply the forceps. Recently I called for my forceps to apply them to the aftercoming head and the nurse passed me a pair of Spencer Wells. While we apply the forceps a nurse takes charge of the legs and trunk and keeps them upwards and forwards towards the mother's abdomen. Having gripped the head, make very gradual and careful traction in the pelvic axis until the mouth comes into view; then stop and wipe out the mouth. There is no need for further speed. Lastly, with great deliberation and care deliver the head over the perineum.

## AN OUTBREAK OF CEREBRO-SPINAL MENINGITIS IN A FOUNDLING HOSPITAL: THE TREATMENT OF CARRIERS WITH "M & B 693".

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IN 1936 the Saint Joseph's Foundling Hospital, popularly known as the Broadmeadows Home, admitted a child who soon after died from a fulminating illness. This was followed by an outbreak of cerebro-spinal meningitis, which recurred at intervals until the end of March, 1939.

### Description of the Institution.

This home is situated at Broadmeadows, Victoria, about twelve miles from Melbourne. It is a collection of well-built brick and wooden units connected with an old homestead, which is used as the administrative building and houses the religious community of sisters who conduct the institution. For a locality so close to the city the home is remarkably isolated. The railway buildings and gatehouse, the municipal offices and one or two farmhouses comprise the settlement within, say, one square mile. Just outside this area is the large military camp, which is usually vacant, and with which, in any case, the home had no communication. The inmates of the home, however, are in no way isolated. There is a large weekly visiting public, and admission and discharge freely introduce new infective risks. The staff consists of the sisters of the order, general and mothercraft nurses, trainees in the mothercraft school, and the domestic and outdoor employees. The medical officer visits daily and whenever specially required. The other inmates are the 300 children, up to three years old, who are housed there, some expectant mothers and mothers with their new-born infants.

This institution is the only one of its kind run by Roman Catholic charity in this State, so that any attempt to isolate the hospital would be likely to dislocate the charitable infant welfare work of the community. In fact, when the home was at length completely closed for admissions, a serious congestion on the "awaiting admission" list was inevitable. In such an institution the effective segregation of any considerable number of infective patients becomes extraordinarily difficult. The healthy children are housed in wards of about thirty each,

with a sister and an adequate nursing staff. Each ward accommodates an age "division", not only to facilitate the specialized care required for each age, but to prevent the difficulties and in fact the injuries that elder children are apt to cause to very young infants when they play in large groups. Each of these divisions shares with another of the same age a portion of the building in such a way that, while completely segregated from the others, each pair of divisions forms a group which has more or less intercommunication during play hours on the verandas. It will be convenient to refer to these divisions in their pairs, each pair thus forming a detached group. In this account the important group is that formed by divisions A and B, which together will be called group X. These two divisions will be known as divisions Xa and Xb respectively. It will be noted, therefore, that while Xa and Xb were separate units under separate staff, they had frequent opportunities of contact. In the same way Yc and Yf form a separate group, and so on.

The members of the staff were not segregated, but mixed in their respective common-rooms *et cetera*.

The wards are well built, airy and well lighted, with wide balconies and verandas attached to each. The children were well fed and cared for, and were well up to, if not over, their respective standards for weight. There was one serious condition, however—namely, that produced by the constant and urgent demand for admissions: the cots were too close, and at times the space between cots was as little as 20 inches and often less than 24.

Each year, as the divisions reached a new age period, the children were promoted *en masse* to another ward and thus to the care of a new staff. This is of importance, because, as we shall see later, the cases were associated with the group of children themselves, and not with any one ward nor with any one staff group.

*Summary.*

The institution holds about 300 children and the necessary staff of sisters, nurses and trainees. The children are separated into age groups. Each group has two divisions, which have intercommunication at play but are completely separated from other groups. The staff remains as a specialist group for that age, but the children are promoted yearly to other wards and to the care of other staff groups.

Each group is designated by a capital letter, and the two divisions of each group are designated by letters in the lower case; thus divisions Xa and Xb form one group (X), and divisions Yc and Yf form another group (Y), and so on.

### History of the Outbreaks.

To make it easier to follow the complicated happenings, a short summary is set out now instead of in its usual place, at the end.

1. 1936. August: Suspect case "O" admitted to division Xb.
   November: First case; in Xa.
   November to January, 1937: Five cases; all in Xa.
2. 1937. May to October: Nine cases; 8 in Xa, 1 in Xb, including recent admissions.
3. 1938. February to March: Five cases; 4 in Xa, 1 in Xb. Preliminary examination of swabs in group X and one control division revealed 24 carriers and 4 carriers respectively.
4. 1938. August to November: Three cases; Xa, Xb and Yc. Isolation became more difficult because of fires and later outbreaks of scarlet fever and measles.
5. 1939. January: Four cases; 1 in Xa, 3 in Xb. An intensive search for carriers was begun.
6. 1939. March: Three cases; all in Xa.

Total cases, 30; 2 were doubtful.

From time to time sporadic cases of meningitis occur in Victoria, usually in the order of one or two per month in a population now nearing 2,000,000. These cases are distributed over the greater portion of the State, and it is rare to receive in any one year more than one notification from any one municipality. The outbreak at Broadmeadows was all the more disconcerting as the last serious epidemic had occurred early in the last war (1914-1915) and then chiefly in military camps.

The origin of this outbreak is quite unknown. There is, of course, the possibility of the more or less spontaneous lighting up of some virulent strain through crowding or other insanitary conditions; but suspicion has been focused on a child (Case "O") who was admitted to the institution in August, 1936. This child was admitted directly to division Xb and naturally had many contacts in the paired division Xa. In fact, as was noticed in retrospect, this child had as much, if not more, actual contact with Xa children than with children of her own group. In any case the whole of group X were contacts and shared the risks more or less equally between them.

A short time after her admission to the institution this child became suddenly ill and within an hour was desperately so. The temperature had reached 106° F., the respirations were rapid and cyanosis was developing. The patient was immediately removed to hospital with the diagnosis of bronchopneumonia (unsatisfactory from an epidemiological point of view) and died about two hours after. No definite diagnosis was made, and the existence of a meningococcal infection was apparently unsuspected.

This case was nearly forgotten when in November there was a definite outbreak of diagnosed meningitis. The general health of the community was excellent at this time.

The first outbreak consisted of six cases, all in group Xa; they occurred between November, 1936, and January, 1937.

The cases occurred in the following order:

| | |
|---|---|
| Case I ..... | November 7, 1936 |
| Case II ..... | November 14, 1936 |
| Case III ..... | November 14, 1936 |
| Case IV ..... | November 17, 1936 |
| Case V ..... | December 6, 1936 |
| Case VI ..... | January 8, 1937 |

The first and fifth patients were twins (see Cases XXV and XXVI).

Immediately on the recognition of the first case the division was isolated. The remainder of the group (Xb) was isolated separately. No illness occurred at this time in Xb. After about three months' freedom from cases the usual annual promotions to higher groups took place, isolation was relaxed and numbers were made up to the normal in the affected group. Groups Xa and Xb were from this time under a completely new staff.

The second outbreak consisted of nine cases (one doubtful), all in group X. The ninth case was in Xb; the remainder were in Xa. The outbreak lasted from May to October, 1937. The cases occurred in the following order:

| | |
|---|---|
| Case VII | May 18, 1937 |
| Case VIII | July 9, 1937 |
| Case IX | August 9, 1937 |
| Case X | August 14, 1937 |
| Case XI | August 17, 1937 |
| Case XII | August 27, 1937 |
| Case XIII | August 27, 1937 |
| Case XIV | September 4, 1937 |
| Case XV | October 24, 1937 |

Four of these patients (Cases VIII, X, XIII and XIV) had not been in this division during the previous outbreak, but were introduced as reinforcements during the annual change to new wards. They had had no previous contact with members of this group.

The hospital and the institution authorities were naturally gravely perturbed. The epidemiology of this disease was, and still is, most obscure, and the published work available appeared hopelessly out of date. Reliance on a short incubation period had proved fallacious, isolation and local treatment had had no apparent effect, and all that could be hoped for was that the outbreak would run its course by exhausting the supply of susceptibles in the isolated group. Nor could the State Department of Health offer much help. The poliomyelitis epidemic was now in full blast and research work was impossible, while the whole of the available staff was already working nearly double shift. The reasonable hopes of the medical staff that the outbreak had exhausted itself seemed to be realized after three months' freedom—that is, until the third outbreak early in the new year.

The third outbreak consisted of five cases; Case XIX occurred in Xb and the remainder in Xa. The outbreak took place in February and March, 1938, and the cases occurred in the following order:

| | |
|---|---|
| Case XVI | February 1, 1938 |
| Case XVII | February 22, 1938 |
| Case XVIII | February 24, 1938 |
| Case XIX | February 25, 1938 |
| Case XX | March 3, 1938 |

The situation was not one to allay alarm, especially as the poliomyelitis epidemic was now running at peak. The situation as we assessed it was this. Twenty cases had occurred in three distinct outbreaks: all were in one group, and all but two in one division; most of the cases had occurred in isolation; the two cases in Xb had occurred ten and three weeks respectively after its segregation from Xa; the cases continued to occur in spite of complete change of staff and quarters: four children out of eight introduced as reinforcements to Xa had contracted the disease.

The natural conclusions were that virulent foci existed in both divisions of group X but not elsewhere in the home. Recourse was then had to the wide spacing of beds and to open-air life, which had been found so successful in the military epidemic of 1915, and the wide verandas and balconies in this home were used to the fullest extent. But there is a vast difference between the dispersing of soldiers' beds and the application of the same principle to an infants' home. For one thing, babies must be under continual observation, and the shortage of staff became acute when an attempt was made to separate them into widely dispersed small groups. About half the children, however, were accommodated on the verandas, and the others were more widely spread in the now partly emptied wards. Rigorous isolation of the groups was enforced and admissions were limited to those which were urgent; new children were admitted into special wards to allow the reduction of numbers necessary fully to isolate each group. An attempt was now made to discover the virulent foci by careful swabbing. The bacteriological department of the University of Melbourne, although already taxed, made available the necessary facilities and provided a skilled worker to supervise and for the greater part to carry out this very delicate piece of work.[1]

A trial was made with division Xa as the chief offender and a "clean" ward was selected as a control. The result was startling. In the control group four "positives" were discovered, no more than would be compatible with a normal population without clinical cases. But in division Xa, 24 of the 28 children were "positive". These were placed under strict isolation in a separate building. The four from the control ward were also isolated. This procedure seemed quite effective, and no cases occurred for five months.

The fourth outbreak consisted of three cases, and lasted from August to November, 1938. On July 25, twenty-one weeks after the last case, the question of restoring the normal activities was considered. The

[1] Professor Woodruff writes: The bacteriological investigation was carried out by Miss Hayward and later by Miss M. Phillips. The technique was as follows:

1. Swabs taken by West's tube from the naso-pharynx were at once touched on the centre of warmed sheep blood-agar plates. The plates were taken in a hot box to the laboratory and the inoculum was spread over the whole surface. The plates were incubated at 37° C. for 24 hours.

2. On scrutiny, typical and suspicious colonies were picked off, examined for typical morphology *et cetera* and incubated in serum broth for twenty-four hours. From the serum broth two tubes were inoculated: one ordinary agar slope was incubated for several days at 22° C. and one serum-agar at 37° C. By this means non-pathogens and saprophytes were eliminated.

3. Any cultures which were pure and morphologically typical and which grew only on serum-agar at 37° C. were then tested for sugar reactions by means of glucose, maltose and saccharose, each in Hiss's serum-water.

4. Organisms which gave a positive reaction (acid) in both glucose and maltose, but no reaction in saccharose after seven days, were finally tested by a blood-agar plate sown from the saccharose tube to prove the viability of the organism and its purity.

Such organisms as passed this complete procedure were called "positive".

congestion of babies seeking admission was acute, and after many serious consultations between the interested authorities, it was decided that, although this was not wholly advisable, a limited freedom would be allowed. Children had been removed by adoption and return to the family; but although it was admitted that dispersal was the best way of ending the risk—namely, to scatter the affected children so widely throughout the State that the carrier density became diluted, and so ceased to be a serious menace—yet it was thought that too free a dispersal of possible carriers throughout the community would create an undesirable alarm. Some children from the affected group X were so dealt with, and the respective medical officers of health were requested to keep them under surveillance. To date no untoward results have been reported.

Unfortunately the pressure on the institution became very severe, and group X was returned to the main building and reinforced with more children from group Y. At the same time a strict segregation was enforced, and both the divisions of X were separated from each other and from the rest of the home, except for one or two "clear" children who were transferred to other wards. The actual outbreak was merely a reminder that things were not safe and consisted of three cases, which occurred in the following order:

| | |
|---|---|
| Case XXI (division Xb) ..... | August 2, 1938 |
| Case XXII (division Yc) ..... | October 28, 1938 |
| Case XXIII (division Xa) ..... | November 20, 1938 |

Case XXII was the first and only case outside group X. But even this child's illness was really an X group infection, as he had been transferred to Y a few days before, in an attempt to remove those believed to be "clear" from those known to be suffering from the disease and/or carriers. Then again, the child in Case XXIII was one of those transferred to that division with others of group Y before the previous outbreak, so that now there had occurred in Xa five cases among eight children transferred from Y to Xa.

So far as isolation is concerned there was now the same state of chaos as before the first swabbing. It had this salutary effect, however, that the home authorities and the medical officer were stiffened in their determination to eradicate the disease and virtually to close the institution until that object was achieved. A disaster now occurred; two fires from unknown causes destroyed two of the wooden buildings, and so greatly reduced the opportunity for effective isolation of the various groups. Another disquieting thing was evident. The child in Case XXIII, who became ill on November 20, 1938, was one of those children with whom Xa had been reinforced. This child was a carrier at that time, and was thought to be quite safe amongst the others who were known to be carriers. To be for five months a carrier and then to become a "clinical case" was so startling a sequence that confidence in the bacteriological attack was severely shaken. Let us anticipate a little here. It was later shown—in the final outbreak, in fact—that the carrier state as disclosed by the examination of swabs did not offer any reasonable hope that that patient would escape the meningeal infection. In other words, a "carrier" was a possible patient, not as in diseases like diphtheria (in which the patient is actually developing clinical disease), but either because the meningococcus in his throat did not stimulate an immunity for him, or (and there seemed to be no proof either way) because the bacteriological findings did not distinguish between a true pathogenic form and a pure saprophyte. Whatever the explanation, the difficulties of isolation had been more than doubled. Isolation groups had to be provided for the well and the sick of each division, for the undiagnosed sick in each division and for carriers and for contacts; this necessitated many involved but separated units. The staff were nearly in despair trying to carry this out for the various age groups—for infants being artificially fed, for infants with mothers, for older babies, for "crawlers" and for toddlers—and were at their wits' end devising means to keep these children clean and happy in the now badly restricted quarters.

The fifth outbreak consisted of four cases, and occurred in January, 1939. Case XXIV was from group Xa; the remainder were from Xb. The cases occurred in the following order:

| | |
|---|---|
| Case XXIV ..... | January 3, 1939 |
| Case XXV ..... | January 14, 1939 |
| Case XXVI ..... | January 22, 1939 |
| Case XXVII ..... | January 24, 1939 |

The child in Case XXIV was "positive" when previous swabs were examined.

The children in Cases XXV and XXVI were twins.

Arrangements were now complete for an organized campaign for examining swabs from the whole institution (described in outline below), and later it was decided to attempt cure by chemotherapy.

The sixth outbreak consisted of three cases, all from Xa. The cases occurred in March, 1939, in the following order:

| | |
|---|---|
| Case XXVIII ..... | March 5, 1939 |
| Case XXIX ..... | March 12, 1939 |
| Case XXX ..... | March 30, 1939 |

All the patients had previously been found to be harbouring meningococci.

These cases occurred during the swabbing campaign. Isolation was now almost impossible, as both measles and scarlet fever had invaded the home. Carrying on as best they could, the sisters cheerfully acquiesced in the complete closure of the home, which was now in a virtual state of quarantine, and they did marvels in improvising isolations as the need arose, including all combinations and permutations of age, carrier state, infection with or contact of measles and scarlet fever and bacteriological groups as they were detected. Clinical diphtheria had fortunately been eliminated as a risk by a rigid series of testings

and immunization, until the whole home was reasonably unresponsive to the Schick test.

With regard to the carriers who contracted the disease, the longest proved "carrier-disease" interval was seen in the last three cases. These children were found to be harbouring meningococci on the occasion of the first swabbing, and examination of swabs up to just before their illness showed that the carrier state still persisted. This is of very great importance, and we are convinced that there is no true incubation period for this disease. The most one can say is that a certain period yet to be discovered is the minimum incubation period—namely, the shortest time between infection and the development of the meningeal symptoms.

### The Bacteriological Examination.

As has been previously mentioned swabs were taken from the children in two wards during the winter of 1938; the examination disclosed that the sister in charge and 24 children out of 28 were harbouring meningococci. In the control ward only four children were found to be carriers.

The 1939 swabbing, however, was planned to cover the whole institution—the children, the sisters, the trainees, the mothers, the domestic and outdoor staff and their families. The swab was taken from the naso-pharynx, as uncontaminated with saliva as the skill of the operator allowed, and the material was immediately sown on plates. These plates were removed in hot boxes to the University of Melbourne for subculture. As at least two negative results are necessary for even a conjectural freedom from infection, the magnitude of this task for an already fully occupied technical staff can be imagined; but the results were usually available in time for the next series to be taken. This naturally took some time, and as has been stated, a small outbreak occurred before the series was completed.

In the first series numbers of positive results were obtained. These are shown in Table I.

TABLE I.

| Sources of positive results. | Number of positive results. |
|---|---|
| Group X (Division A, 13; Division B, 9) .. | 22 |
| Group Y (Division C, 7; Division F, 11) .. | 18 |
| Group E .. .. .. .. .. .. .. .. | 9 |
| Other groups .. .. .. .. .. .. .. | 11 |
| Babies .. .. .. .. .. .. .. .. | 6 |
| Staff .. .. .. .. .. .. .. .. | 4 |
| Infectious Diseases Hospital .. .. .. | 4 |
| Mothers .. .. .. .. .. .. .. .. | 1 |
| Total .. .. .. .. .. .. .. .. | 75 |

This figure (which includes one or two doubtful results), if distributed over the home, would not have been of importance. But the high figures for groups X and Y were suggestive. The total average was somewhere about 22·5%; this, although on the high side, was not incompatible with a normal population. The individual divisions, however, which were suspect, gave figures in the order of 40%. The most striking thing was the increase noted in group Y, in which there had been no cases so far, but in which one child (Case XXII) had on October 28, 1938, contracted the disease after his recent removal from group X. This led us to fear an outbreak in these divisions and to demand some better form of prevention than those which had failed in the past. Isolation was rejected as merely prolonging the period of infectivity without diminishing the total number of cases.

### Treatment.

Isolation, general hygienic measures and local treatment had failed to reduce the epidemic numbers. The home could not be closed indefinitely. There remained apparently the natural measure of temporarily closing the home and distributing the inmates throughout the country. This, while probably effective in stopping the epidemic, would have been most unpopular, and it was certain that sooner or later the disease would occur in the ordinary course of things in a child who had been in contact with one of these discharged inmates. Political and economic aspects could not be ignored, and there was even the risk of legal proceedings through the alleged neglect of some unfortunate officer's duty.

We decided to attempt elimination of the carriers by the administration of a sulphonamide. The reasons which decided the trial of this drug were simple. Besides our feeling of being otherwise helpless (and published authorities were particularly unhelpful), there was a wave of excitement over the almost epoch-making introduction of this drug into medicine. More particularly, however, it was known that successful clinical treatment had been given in such cases in the acute form; but more important still, there had been success in treating chronic gonorrhœa with various forms of sulphamino compounds, especially with "M & B 693". The department, moreover, had a supply of this drug in hand, so we postulated a significant analogy between our carriers and these chronic gonorrhœa patients—namely, that the cocci were more or less removed from the blood stream and required contact with the drug in that particular fluid, and we decided to dose the children sufficiently to charge the saliva and post-nasal secretions with the drug. Here again we found a difficulty—namely, that of dosage. No authority was available, and a sketchy trial on several volunteers showed that the dose given did not seem to have any relation to the saliva content. The helpful study by Williams and his colleagues[1] had not then been published; but the willing help and advice that we received from all those who had used the drug in clinical cases encouraged us to give maximum doses.

A beginning was made with the carriers. The dose chosen was in the ratio of one gramme daily for each ten pounds of body weight, divided into four equal doses. The first dose was given at 6 a.m. At 8 a.m. one child vomited. The second dose was given at 10 a.m., and at 12.30 p.m. three children vomited. The third dose was given at

2 p.m., and between 5 and 5.30 p.m. fourteen children vomited. The fourth dose was given at 6 p.m., and five children vomited before midnight. Only one child of the 24 in the series had resisted so far. It was noted that the younger children held out longer, and that the vomiting occurred immediately after the next meal. Treatment was naturally suspended. After one day's spell it was begun on a lower ratio of one gramme for each fourteen pounds of body weight. The children tolerated this well, and no reactions occurred during the five days' course.

After a spell of five days the second half of the course was given, so that in the course of a fortnight each child received a total dose of ten grammes for each stone of body weight. The children were allowed to rest for two weeks and further swabs were taken. The result was astounding; the report was: "All negative."

We are particularly indebted to Professor Woodruff for the care taken by his department to be able to assure us that there was no discoverable flaw in this report, and it was with great hopes that we hastened to submit the rest of the affected persons to the same treatment, with the same results. A second swabbing, however, showed that six children had relapsed and a third swabbing confirmed this.

A second course of treatment was immediately given to these children; an increased dose of one gramme daily for each twelve pounds of body weight was used. As four children were found to be still infective, a third course was given; the dose was worked up to one gramme daily for each ten pounds of body weight, and one more child was declared "negative".

The position now is as follows. Of 75 children treated with "M & B 693" six were still harbouring meningococci after one course, four were still harbouring meningococci after two courses, and three are still harbouring meningococci after three courses. Only one of these is from the virulent group X. The others are from wards which have never been affected. One of these has been discharged to his home under surveillance, and the other is being kept until a suitable home can be found for him. The third or "virulent" child is still in isolation and will be kept there for the time being while other methods of dealing with him are evolved, such as vaccine therapy or treatment with drugs and vaccine.

### *Comment on Treatment.*

The large dose was too severe to begin with. All but one child vomited after the next food or within six hours if no food was given within that period. Only one child developed a rash; this disappeared after the drug was withheld for one day. No reaction was observed with the large dose if the children were gradually accustomed to it over a day or so. The sudden drop in the carrier rate must be attributed to the treatment, as it remained at or near the original figures among the untreated children.

Owing to the need for haste it was inadvisable to institute a course of controls. This, of course, would be necessary to discover whether the reduction in carrier numbers was due to the drug, and if so, whether the massive doses which bordered on the dangerous were necessary. Relapses do occur, as in the analogous case of the chronic gonococcus carrier.

The most important thing, however, is that a year has now passed without a further case, and the home is now carrying out its normal function.

It was suggested that the fall in the carrier rate might be due not to the drug, but to the febrile state associated with the outbreaks of scarlet fever and measles. It was certainly noticed that children in or shortly after their attack were mostly free from meningococci, but that the positive state returned shortly after convalescence.

It is suggestive also that children suffering from the clinical disease who were treated with this drug ceased to be carriers after convalescence; but this did not hold respecting those who survived without the drug.

### Miscellaneous Observations.

The disease attacked the older children. The carrier rate was highest in the older children and next highest in the very young infants. The children were sensitive to the drug in direct relation to their age. Young infants tolerated their proportional dose without exception. The only two pairs of twins in the institution were all attacked by the clinical disease. Typing of the organism was not feasible as, although in the clinical cases the patients harboured organisms that could be separated, the organism in the carrier state appears to revert to a general type.

Virulence tests were not carried out. It was proposed to make these tests, but the disappearance of clinical material after the drug treatment made it unnecessary as well as impracticable. In any case, it is a doubtful procedure at any time.

### Summary.

A series of outbreaks of cerebro-spinal meningitis occurred in a foundling hospital.

Three hundred children were accommodated, of whom 30, all associated with one group X of 60 children, were affected over a period from November, 1937, to March, 1939. General hygienic measures and local applications failed to prevent cases. Bacteriological examination of swabs disclosed 75 carriers, mostly in the affected wards. Isolation was complicated by the necessity for keeping age groups separate, by the destruction of two buildings by fire and by the outbreak of measles and scarlet fever. The carrier children were treated with "M & B 693"; this treatment was followed by an immediate drop in the number of carriers from 75 to 3.

### Conclusions.

In a close community such as a foundling home meningitis can be a persistent disease.

The administration of sulphanilamide in large doses reduces the carrier rate, and although there is some relapse, it appears to be sufficiently effective in reducing the carrier rate below the danger level. Febrile conditions also reduce this rate; but relapse is the rule during convalescence from the intercurrent disease. Children, especially the older ones, should not be given excessive doses to begin with. There is, moreover, no evidence that smaller doses would not be effective.

In stubborn outbreaks such as this a course of sulphanilamide for all carriers and contacts is a feasible attempt to relieve the incidence of the disease. It should be remembered that the numbers are too small to justify the quoting of percentages; but the figures suggest that wards with a high proportion of carriers are danger points to the whole institution.

### Acknowledgements.

Acknowledgements are due to Professor H. Woodruff and his staff for the almost endless care and attention to detail that this series of bacteriological examinations demanded; to Dr. V. L. Collins and Dr. Howard Williams for collecting and supplying information which enabled us to make the necessary decisions; and to our colleagues generally for advice and encouragement, without which this experiment would probably not have been made.

### Reference.

(1) S. Williams, B. Splatt and R. Jakobowicz: "The Concentration of Sulphanilamide in the Saliva Following Oral Administration", THE MEDICAL JOURNAL OF AUSTRALIA, Volume I, Number 4, January 27, 1940, page 120.

## Reviews.

### DIET AND HEALTH.

AT a time when increasing interest is being taken in diet as a factor in the maintenance of health, there is need for an authoritative work dealing with the requirements of a good diet and the usefulness of the various common foodstuffs in fulfilling those requirements. This need is completely met by V. G. Plimmer in the recent edition of her book "Food Values at a Glance".[1] What might be termed the groundwork of dietetics—such matters as Calorie requirements, discrimination in the use of proteins, the need for a balanced diet, and the enormous demands of childhood and youth—is not only soundly covered in this book, but a particular lucidity of expression greatly enhances the value of the subject matter.

Proceeding onward from this foundation, the author is perhaps most effective in bringing home most forcibly the deficiencies of our common dietary régimes, whether the money available for food is limited or plentiful. Particular stress is laid on lack of vitamins and minerals. Thus, "three-quarters of the mineral salts, practically the whole of the vitamin content and the best quality proteins are removed in the process of roller-milling to make white flour". The vitamin $B_1$ value of a diet from the "Doctors' Cookery Book", issued in 1936 by the British Medical Association for the guidance of working-class housewives, is about 400 units a day—about half the accepted optimum. "Milk is so poor in this vitamin that all bottle-fed infants, or invalids on a milk diet, need a supplement of yeast extract or malt extract." With increasing recognition of the tremendous importance of vitamin $B_1$, and of the widespread disorders of health resulting from its lack, it is clearly desirable that practitioners be informed as to the values of different foodstuffs in this as well as other respects, and be able to advise how deficiencies may be avoided, if possible without disturbing living costs. The doctor who has studied this little book of Plimmer's will be armed at all points, and, if memory should need refreshing, the abundance of graphs will supply all needed information, literally at a glance.

[1] "Food Values at a Glance and How to Plan a Healthy Diet", by Violet G. Plimmer; 1940. London: Longmans, Green and Company. Crown 8vo, pp. 190, with 41 tables and charts, of which 27 are in colour. Price: 6s. net.

### MODERN CLINICAL MEDICINE.

"SAVILL'S System of Clinical Medicine" a "best-seller" among medical works, has just reached its eleventh edition.[2] The book first appeared in 1905, and every three years or so since then a rejuvenating operation has been performed with success. Most of the nineteen contributors to the present book are eminent medical men and women with senior hospital appointments in London. Dr. Agnes Savill and Dr. E. C. Warner are the editors, and they have adhered to the general plan formulated by the late Dr. T. D. Savill, the original author.

The method of presentation is a sound one. Having in mind a patient with a symptom, the student is led to consider the possible causes of the illness. The diagnosis is developed, and then follows a clear description of the main features of the disease and the therapeutic management. Attention is directed at the sick man, the illness he suffers from, and what can be done about it.

The new edition worthily follows in the steps of the others. The information it offers is reliable, comprehensive and concise. It covers the whole field of general medicine, including infectious diseases, the psychoneuroses and diseases of the skin. Nervous diseases are especially well dealt with. In the sections on disease of the cardiovascular system, arterial diseases and the irregularities of cardiac rhythm are clearly discussed, and there is suitable mention of the fourth lead in electrocardiography. There is a useful chapter on clinical pathology and bacteriology, and although most of the descriptions of tests are too sketchy for the laboratory worker's guidance, they are sufficiently detailed and clear to enlighten the student of general medicine on the methods used and on the interpretation of results.

The book is up to date in its information. Gaisbock's disease, the uveo-parotid syndrome, Crohn's disease, tomography, sternal puncture, and a score of other "new" diseases and procedures find places. Yet it is in the discussions of everyday common symptoms and their causes that the book really excels. Dyspnœa, cyanosis, dysphagia and chronic indigestion are good examples. Clinical teachers, preparing material for their classes, will here find good fare.

The book is produced in the excellent manner characteristic of the publishing house of Edward Arnold. It is a sound book. The physician in his study will find it a very pleasant companion and a stalwart friend. It is a book one grows fond of, a book to keep.

[2] "Savill's System of Clinical Medicine, Dealing with the Diagnosis, Prognosis and Treatment of Disease, for Students and Practitioners", edited by A. Savill, M.D., and E. C. Warner, M.D., F.R.C.P.; Eleventh Edition; 1939. London: Edward Arnold and Company. Medium 8vo, pp. 1169, with illustrations. Price: 28s. net.

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## WAR BLINDNESS AND ITS PREVENTION.

BLINDNESS due to war, and indeed that associated with any human activity, may be classified as arising either from traumatic or from non-traumatic causes. The prevention of traumatic war blindness is, generally speaking, not the duty of the army medical service. With non-traumatic blindness the matter is different. Here the responsibility rests chiefly with the army medical service; but the preventive measures, which may be summed up in the word rejection, must be applied not to the fully fledged soldier, but to the recruit prior to his enlistment. A great deal has been said and written lately about the need for care in the examination and acceptance of recruits for enlistment in the Australian army; but this is justified, because (we cannot refrain from mentioning it again) the history of the last war has shown that when a high standard of fitness is adopted efficiency will be attained. A correspondent has pointed out in a recent issue of this journal that the object of the medical examination of a recruit should be to determine whether he is fit, not whether he is unfit. With this we shall all agree. It may, as this correspondent suggested, be well for the army that certain elaborate methods of examination are not insisted on; but everyone, medical and non-medical alike, will agree that no recruit should be accepted if his eyesight is so defective that it is likely to deteriorate as a result of service.

The subject of war blindness has been exhaustively discussed by Sir Arnold Lawson in "War Blindness at St. Dunstan's", published in London in 1922 as one of the "Oxford Medical Publications". In this book, which is worthy of careful study at the present time, the author discusses traumatic and non-traumatic blindness, as well as pensions and reeducation. The section devoted to non-traumatic blindness is that to which we would draw attention. The subject is discussed under several headings, as follows:

1. Blindness caused by inflammatory diseases of the eye:
   (i) Interstitial keratitis.
   (ii) Other varieties of inflammation.
2. Optic nerve blindness:
   (i) Primary optic nerve degeneration.
   (ii) Secondary optic nerve degeneration following swelling.
3. Cases of detachment of the retina other than those in which detachment was of traumatic origin.
4. Miscellaneous cases, consisting of many varied groups of disease-blindness, which are most easily classified under this heading.

The author gives short histories of many cases recorded at Saint Dunstan's Hostel, and he shows that in many instances the patients should not have been accepted for active service. Sometimes an obvious pathological condition had been present for years, and sometimes the condition was latent, but discoverable on examination, and under the stress of active service became manifest. Details of cases or their numbers need not be given, but some of Lawson's conclusions must be stated. He holds that it is not advisable to accept for active service any man whose defective sight in both eyes is due to old inflammation of the uveal tract. He believes that, no matter how quiet the eyes may be or how long a time the disease has been stationary, old inflammatory mischief is always apt to recrudesce under conditions inimical to general

health. Lawson's second point is that the greatest importance should be attached to the defective sight of one eye, however sound the other may be. If it is found that the defective eye has been seriously injured by destructive inflammation, the candidate should, he thinks, be refused, though the loss of sight may have occurred many years earlier. If one eye has been severely affected by inflammatory disease, the other is always to some extent liable to attack; this is specially true in the presence of syphilis, gonorrhœa or rheumatism. Lawson's third conclusion is the most important—he holds that a careful ophthalmoscopic examination should always be made by someone who has a real knowledge of the subject. If this had been done in the war of 1914-1918, he declares that a large number of recruits with active congenital disease, such as *retinitis pigmentosa* or other forms of chronic chorioido-retinitis of various kinds would have been refused "and the State would have been saved disability pensions amounting to many thousands of pounds *per annum*". Incidentally, of course, much personal suffering would have been avoided.

The prevention of war blindness should really be part of the general effort to prevent blindness, which was discussed in a recent issue of this journal. Much that was written on that occasion is applicable in the present instance. If medical examinations are carefully made, recruits whose sight is likely to be affected by service conditions will not be accepted. If on the first examination there is reason to suppose that sight is defective, the candidate is, according to Australian Army Medical Corps regulations, brought before a board, one member of which is an ophthalmologist, and is examined so that the cause of the defect may be determined. The responsibility thus rests with the medical officer making the first examination. This examination should consist of something more than an attempt by the candidate to read the test types; it should include at least the taking of an ophthalmological history. The medical officer must try to find fit men; but, in so doing, he must neither prejudice the efficiency of the army nor condemn the candidate to risks that would be likely to entail loss of vision.

# Current Comment.

## ABSCESS OF THE LUNG.

THE notable advances in the treatment of acute abscess of the lung during the last twenty years have increased rather than diminished the restraint, the judgement and the decision required of the medical attendant in the management of this disease. Physicians are agreed that the indication for operative surgery is imperative when the course of the disease is clearly in the direction of fatality or when empyema has occurred; but the indication is elective when the course of the disease is fluctuant, remittent or essentially stationary; and we know that if spontaneous drainage through natural channels should occur, then complete recovery may follow and the need for a surgical operation is at least not urgent. On the other hand, we must not fail to give due weight to the increasing volume of surgical opinion, supported by excellent and improving statistical results, that pulmonary abscess is "a surgical disease" and that radical treatment is more successful than conservative in many of those cases in which the indication for surgery is elective. Between conservatism and radicalism the cautious clinician must weigh the possibilities, limitations and dangers of short-wave therapy and of bronchoscopic treatment; the former was discussed in an article by G. C. Moss in these pages on March 5, 1938, and the latter at a meeting of the Victorian Branch of the British Medical Association, reported in our issue of June 8, 1935.

H. Neuhof and A. S. W. Touroff, of the Mount Sinai Hospital, New York, and successful exponents of early thoracotomy for acute putrid lung abscess, have recently put forward some important new principles bearing on the surgical treatment.[1] The most important of these principles is that all such pulmonary abscesses are closely subjacent to the visceral pleura and that "central" or "deep-seated" abscesses are not properly so called. Their article records the surgical treatment of eighty-six consecutive cases of pulmonary abscess, and in every one of these only a thin shell of lung separated the abscess from the visceral pleura. Not all abscesses are situated close to the costal surface of the visceral pleura. Of 73 unruptured abscesses upon which they operated, 67 were close to the costal surface of the lung, three close to interlobar fissures, two close to the phrenic surface, and one close to the mediastinal surface. In the case of an abscess situated close to an interlobar fissure a considerable thickness of lung would have to be traversed that an entry might be made into the abscess cavity from the costal surface; but on separation of the adhesions between the two lobes and on an approach being made to the lesion through the fissure (the correct surgical approach in such a case) the abscess is found to bulge into the fissure. The super-

[1] *The Journal of Thoracic Surgery*, April, 1940.

ficial situation of acute putrid pulmonary abscess is the key to ready operability in this disease; and the corollary to this proposition is that when a thick layer of lung has to be traversed at operation the site of approach is incorrect. Another principle put forward by Neuhof and Touroff is that adhesion occurs between the layers of the pleura overlying a pulmonary abscess. They state that adhesions were encountered over the abscess in every case in their experience and that usually these adhesions were extensive and dense. The importance of this observation is that it connotes the possibility in most cases, given accurate pre-operative localization of the abscess, of a single-stage operation conducted entirely through the zone of limiting adhesions. That the accurate pre-operative localization of abscesses is practicable by means of radiology, aided if necessary by bronchoscopy, is indicated by the fact that the authors, making use of these methods, were able to expose the adherent pleura accurately in 61 out of 72 operations and in the great majority found it necessary to resect only one rib. The operation usually practised by Neuhof and Touroff, when the adhesions over the abscess have been exposed, consists of "clean-cut entry", "unroofing" of the abscess cavity and packing it with gauze; they seldom employ tube drainage.

The newer principles of the treatment of pulmonary abscess, which have now taken shape so clearly, must make for greater clarity of thought at the bedside and increased purposefulness and confidence in the operating theatre; they will serve well if they give us surgical resource without surgical bias. It is certain that with their advent medicated vapours, the Burney Yeo inhaler containing a pledget of tow steeped in creosote and worn night and day, and other mere semblances of active treatment are becoming things unknown to the rising generation.

## OBESITY IN CHILDHOOD.

HILDE BRUCH has been investigating the difficult problem of the obese child in a special clinic attached to the Vanderbilt Clinic, New York, and in a recent article[1] adds to our knowledge of this subject. Dissatisfied with the separation of obesity into the exogenous, due to over-eating, and endogenous, due presumably to some endocrine dysfunction and allegedly accompanied by an abnormally small food intake, Bruch first investigated the amount of food eaten by obese children.

Information concerning the dietary habits of 136 fat children was obtained. The families of 80% of these had recognized that the food intake was in excess of normal, and 6% had deliberately attempted reduction. Some described the appetite with revolting frankness; for example: "The neighbours call her in if their children won't eat; she can eat all the time, and plenty of it." The remaining 20% described their child's appetite as normal or small, but when detailed investigation was possible in these cases by a social visitor it was found that the parents' idea of a normal diet was grossly exaggerated and that the children were in fact over-eating. A few children were obese, but were not eating excessively. In these it was found that a period of rapid increase in weight had occurred at some stage of the child's life, and this stage had been characterized by over-eating. Obesity, once developed, was then maintained on a normal food intake. In short, the rate of gain in weight rather than the degree of over-weight at any one time corresponded closely with the amount of the diet.

Having been satisfied that these children were or had been over-eating, the author attempted to discover why, and here the report becomes specially interesting. Many of the children, it was found, had been deprived of normal psychic outlets and satisfying contacts. Many, for a variety of reasons, had been exposed to prolonged parental over-protection, and food for them had attained an inordinate psychic importance. Here was something they could dominate and which gave them satisfaction. In a large group of cases, on the other hand, the act of the child's over-feeding gave emotional satisfaction to the mother. Such were mothers who had suffered severe deprivation during their own childhood or who, not wanting the child during pregnancy, relented when it was born and thereafter could not do enough for it. Occasionally the excessive feeding resulted from abnormal concern about the child's diet following a severe gastro-intestinal upset earlier in the child's life.

If, then, any treatment was to be attempted by a dietary régime, these psychic aspects had to be first resolved. It was found that the efficacy of treatment depended on the cooperation of the parents, and this in turn depended on the concern they felt about the child's condition. Only a small proportion of the patients had come to the clinic of their own desire for treatment of their obesity. These cooperated well. Others, to whom eating was of psychic importance, needed careful individual approach, for simply to put these children on restricted diets made them nervous and irritable. Used as they were to indulgence and over-protection, the discipline imposed by the diet was beyond their tolerance, and either the children refused to return to the clinic or their parents felt they were wasting time and money for advice which the child would not follow. Whenever maladjustment existed, the author insisted that no attempt should be made to restrict the diet without an attempt to help the child to find some other outlet and satisfaction. Time has not yet elapsed to allow the author critically to evaluate the results obtained.

Finally, to explain these interesting phenomena, the hypothesis is advanced that emotional experiences call into play functional disturbances of the hypothalamus which may be of importance in determining the obesity of this large group of patients in whom no other organic lesion could be found.

[1] *American Journal of Diseases of Children*, April, 1940.

# Abstracts from Current Medical Literature.

## PÆDIATRICS.

### Erythema Nodosum in Childhood.

JULIET E. THORNER (*Archives of Pediatics*, October, 1939) comments on the controversy which still engages the attention of many investigators as to the causative factor of *erythema nodosum*. In Wallgren's classical description of primary tuberculosis in childhood he states: "The syndrome (*erythema nodosum*) is itself non-specific and may occur in children who do not react to tuberculin. In such cases it stands to reason that it must be caused by another agent than tuberculosis." In a later paper Wallgren discusses a case of *erythema nodosum* in an eleven-year-old boy who suffered from rheumatic fever with joint and cardiac involvement; and he believes that, though rare, rheumatic fever may be classed among the non-tuberculous diseases giving rise to *erythema nodosum*. The author presents seven cases of *erythema nodosum*, proven to be associated with *Oidium coccidiodes* and independent of either tuberculous or rheumatic infection, and he considers that these may be added as further substantiation of Wallgren's belief. The first connexion between *erythema nodosum* and the coincident discovery of the fungus coccidiodes in the sputum of six patients living in the San Joaquen Valley was noted and published by Myrine Gifford three years ago. In all of the author's cases a definite pulmonary complication, as shown by clinical and X-ray findings, accompanied the *erythema nodosum*. X-ray examination revealed a characteristically opaque lung with considerable hilar change and a picture suggestive of extensive tuberculous infection, which disappeared entirely within a month's time and failed to progress later into granulomatous or caseous lesions. No tubercle bacilli were ever isolated from any of the specimens, and in all but one case Mantoux tests invariably failed to yield a reaction.

### Chronic Ulcerative Colitis in Children.

R. J. JACKMAN, J. A. BARGEN AND F. HELMHOLZ (*American Journal of Diseases of Children*, March, 1940) have made a special study to determine on a statistical basis the difference, if any exists, between the nature and the course of chronic ulcerative colitis as it affected 95 children less than sixteen years of age and as it affected the whole group of 871 patients (children and adults), which included the 95 child patients previously mentioned. Chronic ulcerative colitis is not so rare during infancy and childhood, that is, prior to the sixteenth year of life, as is generally supposed. Over a seven-year period one of every 274 patients in the section of pædiatrics of the Mayo Clinic had chronic ulcerative colitis, whereas in the group as a whole the condition was found in the proportion of one to 569 of the patients registered. In regard to the predisposing factors and the factors affecting relapses of the disease, there is comparatively little difference between the group of children and the group as a whole. Among adult patients, infections of the upper portion of the respiratory tract and sore throat were the most pertinent predisposing factors. Only four of the entire group studied indicated that acute infectious fevers of childhood had been a factor in the onset of chronic ulcerative colitis. Two patients experienced symptoms after being afflicted with measles, one after having had chickenpox, and one after an attack of scarlet fever. As compared with the adult group, more children have severe or fulminating symptoms at the onset of the disease. Because of the chronic nature of the disease it would seem probable that the frequency of complications (for example, polyposis and stricture) would be in direct proportion to the number of years that the patient has had the disease; the authors' study indicates that this prediction is true. Forty-five of the group of 95 children had complicating factors, and this is a somewhat higher percentage than that for the entire group of patients. The incidence of carcinoma of the large intestine was 3·2% for the entire group, and carcinoma occurred as a complication in 6·3% of the group of 95 patients in whom the onset of colitis occurred before the sixteenth year of life. Although the disease is particularly devastating when it occurs during childhood, this does not preclude the living of a normal span of life by a child so afflicted. The authors' study would indicate that when a patient has survived the first years of the disease the tendency in general is for the disease to become milder or perhaps for the patient to become better able to tolerate the condition.

### Treatment of Pertussis with a Detoxified Antigen.

N. N. GREENSTEIN AND W. LANG (*American Journal of Diseases of Children*, March, 1940) have investigated the therapeutic efficacy of a detoxified antigen in the treatment of pertussis. They draw attention to numerous measures which have been recommended for the treatment of this disease, such as various forms of vaccines and innumerable drugs, including among the most recent ascorbic acid and sulphanilamide; none of these has proved entirely satisfactory. One of the latest forms of therapy along immunological lines is the use of a toxic filtrate of *Hæmophilus pertussis* that has been detoxified with a solution of formaldehyde in the manner in which diphtheria toxoid is produced; an antigen of this type was used by the authors in their investigations. Almost all of the patients had moderate or severe pertussis, and the number of patients in the treated and untreated groups was almost equal. The condition of the patients two weeks after admission to hospital was compared with their condition on admission in order to determine the presence or absence of clinical improvement. This interval of two weeks was selected in order to allow sufficient time for the antigen to evoke a therapeutic response. The authors found that the administration of the antigen failed to influence favourably the clinical course of pertussis, especially in patients with severe pertussis and in the younger groups. The authors were especially interested in children under one year of age when the condition was severe, since this is the group associated with the greatest frequency of complications and highest mortality. They found that the administration of the antigen presumably did not prevent the development of bronchopneumonia.

### A Frequent Diagnostic Error in Acute Rheumatic Carditis.

H. ROBBINS AND M. H. DURANTE (*Archives of Pediatrics*, April, 1940) present the histories of five children with physical findings and X-ray evidence to demonstrate the frequency and ease with which an erroneous diagnosis of pneumonia may be made because of the passive pulmonary congestion often accompanying rheumatic carditis. In these cases the lungs show slight or marked dulness just below the angle of the scapula in addition to diminished breath sounds and occasionally moist râles. These lung findings, in the presence of a high temperature and dyspnœa, give a clinical picture that may be easily mistaken for pneumonia. However, X-ray evidence will be lacking for such a diagnosis. The typical X-ray findings are accentuated markings, radiating fan-like from the hilus, accompanied at times by mild surrounding infiltration. It is evident from a study of the cases presented that the right lung is the one usually involved. Why this is so is not entirely clear, unless it be due to anatomical relations of the right side of the heart and the root of the right lung, or it may be due to the more common occurrence of dilatation of the right side of the heart. Apparently but a slight enlargement is necessary to produce pulmonary congestion. To avoid error in the interpretation of lung signs it is necessary first to recognize the presence of rheumatic carditis. When a history of joint pain is obtained, accompanied perhaps by an upper respiratory infection and coupled with evidence of cardiac involvement, the diagnosis of rheumatic carditis must be made. The increased blood sedimentation rate will furnish further evidence. A lobar pneumonia preexisting and responsible for congestive cardiac failure cannot be considered as a probability when children are affected.

When once the diagnosis of rheumatic carditis is made, the above-described lung signs will be readily understood to be due to passive congestion.

## ORTHOPÆDIC SURGERY.

### Ununited Intracapsular Fractures of the Neck of the Femur.

EDWARD L. COMPERE AND JOHN LEE (*The Journal of Bone and Joint Surgery*, April, 1940) describe their method of securing restoration of physiological and anatomical function in old ununited intracapsular fractures of the neck of the femur. They expose the site of fracture and disturb the fibrous union only in so far as is necessary to obtain alignment of the fragments and approximation of the fracture surfaces. Two tibial bone grafts are inserted across the fracture site through half-inch drill holes. By means of a hand drill three or more threaded wires are then introduced as for the nailing of recent fractures. They claim that the wires will do less harm than a Smith-Petersen nail, which is a three-bladed chisel and which might further reduce the already depleted blood supply of the head of the femur. The patients are allowed to sit up in a chair seven days after operation, and most of them are walking with the aid of crutches on the eighteenth day after operation. The average period in hospital is twenty-four days. Unrestricted motion of the knee, hip and ankle is permitted within one week after operation, but no weight bearing is allowed within a period of less than five months after operation, regardless of how solid the union appears to be from radiological or clinical examination. If weight bearing is begun before sufficient time has elapsed to permit revascularization and revitalization of the head of the femur, necrosis and collapse of the cortex of the head may be anticipated. If aseptic necrosis of the head of the femur is present at the time of operation, or if it occurs subsequently, weight bearing should be delayed for at least one year or until replacement or revascularization occurs.

### Myositis Ossificans Traumatica.

AUGUSTUS THORNDIKE, JUNIOR (*The Journal of Bone and Joint Surgery*, April, 1940) presents his views on the pathology and outlines the treatment of *myositis ossificans traumatica*. He challenges the accepted idea that *myositis ossificans* is not inflammatory in any respect, and bases his remarks on the study of twenty-five cases. Clinically, during the first two weeks after injury it is most apparent that myositis does exist. The classical signs of "tumor", "dolor", and "calor" are all present, while the loss of function is extraordinary. The inflammatory process gradually subsides as ossification takes place. This ossification is slowly absorbed in part and sometimes in full, according to its size and location. The muscle function returns to normal, except in those instances in which the ossification occurs near a joint. The diagnosis is clear cut and apparent. A muscle contusion, receiving the usual careful physical therapy, in the course of four or five days does not respond properly to treatment. The involved muscle becomes more acutely tender, firmer and hotter, and loses function day by day. A striking feature is that the part becomes progressively acutely tender to ordinary light massage. The stage of ossification does not become apparent until between the sixteenth and twenty-first day, and then can be discovered only with the aid of X rays. In the author's cases the muscles over the following bones were involved: the femur in 14 instances, the humerus in seven, the tibia in three, the fibula in two, and the radius in one. In two cases more than one part was involved. The treatment consists in the immediate application of cold and of a compression bandage to control hæmorrhage, and later of heat to aid in absorption. It is important to avoid massage in all severe and tender muscle contusions. Operative removal of the ossification is indicated only when it occurs near a joint and the function is permanently impaired, and then only from twelve to twenty-four months after the injury.

### Sciatica and the Intervertebral Disk.

JOE PENNYBACKER (*The Lancet*, April 27, 1940) discusses the connexion between sciatica and the intervertebral disk. He points out that compression of one or more nerve roots may be caused either by a prolapsed *nucleus pulposus* or a herniation of the *annulus fibrosus*. The results of treatment by operation in the former were more satisfactory than in the latter condition. In none of thirty cases could the author demonstrate any connexion between hypertrophy of the *ligamentum flavum* and the sciatica. The clinical picture of a damaged lumbar intervertebral disk is most commonly that of "ordinary sciatica"—sciatic pain, pain when the nerve is stretched, tenderness of the nerve trunk, diminution or absence of the ankle jerk, and absence of any gross lesion involving the sciatic nerve or its component roots. There is a history of injury in most cases, and this may vary considerably in severity. The injury is usually followed by low back pain, which may disappear entirely or merge gradually into the sciatic pain. Both the back pain and the sciatic pain are noticeably variable in incidence and severity; periods of relative remission or complete freedom from pain are common. The physical signs are flattening and rigidity of the lumbar part of the spine, a lumbar scoliosis with the convexity to the side of the lesion, tenderness over the lumbo-sacral and sacro-iliac areas, pain when the sciatic nerve is stretched, tenderness over the nerve, especially at the sciatic notch and in the back of the thigh; muscular weakness is present in most cases in the anterior tibial and calf groups along with perceptible wasting of these muscles. Diminution or absence of the ankle jerk is found in all cases. Paræsthesia is found in more than half the cases and is confined to the lower part of the calf and the outer side of the ankle and foot; impairment of sensation can be demonstrated in these cases. The diagnosis is confirmed by the intrathecal injection of lipiodol; but this is removed at operation by a small hole made in the theca. The offending portion of disk is removed by an extradural route after a very small laminectomy. Under the heading of diagnosis the author mentions some of the other conditions which may cause low back pain and sciatica; he remarks that only about 2% of many hundreds of patients at the Mayo Clinic with pain in the back and lower limbs came to operation. He gives as indications for operation: (*a*) acute sciatica, which sends the patient to bed and which persists, despite adequate rest, for five or six weeks; (*b*) frequently recurring attacks; and (*c*) chronic continuous sciatica.

### Sympathectomy in Vascular Spasm of the Extremities.

R. H. SMITHWICK (*The New England Journal of Medicine*, April 25, 1940) discusses the rationale and technique of sympathectomy for the relief of vascular spasm of the extremities. He stresses three points: first, the operation must be anatomically complete; second, it must be physiologically sound; third, it must be performed in a manner that guards against regeneration of the nerve fibres. Circulating hormones are able to produce vaso-constriction after sympathectomy, and this compensatory humoral action is three times as great after post-ganglionic section of the sympathetic nerve fibres as is that resulting from preganglionic section. To interrupt the sympathetic supply of the upper extremity, the author divides both rami of the second and third dorsal ganglia, the anterior and posterior roots of the second and third dorsal nerves, the former within the arachnoid, and the sympathetic trunk below the third dorsal ganglion; the proximal end of this trunk is then brought up into the wound and sutured to the muscles. The operation is performed through a posterior incision, and by the removal of portion of the third rib and the tip of the corresponding transverse process. If both extremities need denervation, they are operated on separately about a week apart. The lower extremity is denervated by excision of portion of the lumbar trunk, including its first, second and third ganglia along with the corresponding *rami communicantes* in women; in men the first lumbar ganglion and its rami are left undisturbed.

# Special Articles on Psychiatry in General Practice.

*(Contributed by request.)*

## IV.

## ÆTIOLOGY: THE PSYCHOLOGICAL ENVIRONMENT.

THE outstanding contribution of modern psychology is the recognition of the importance of the emotional life of the individual. In spite of all the fanciful exaggerations of the Freudian school, the insistence by Freud and his followers on the early impressionability of the child and on the significance of certain unpleasant experiences for the warping of later personality development has had its repercussions on many aspects of our social and cultural life, not least on education, if we use that term in the widest sense. It is not suggested here that Freud discovered either infantile impressionability or the craving for security in emotional relationships, to mention only two important aspects of child psychology. The following is from a medical work of 1774—"Buchan's Domestic Medicine":

> Did mothers reflect on their own importance, and lay it to heart, they would embrace every opportunity of informing themselves of the duties which they owe to their infant-offspring. It is their province, not only to form the body, but also to give the mind its most early bias. They have it very much in their power to make men healthy or valetudinary, useful in life or the pests of society.

But the wide interest aroused by Freudian and allied theories, even more outside than within the medical profession, has at least led to healthy discussion and has stimulated inquiry.

It would, of course, be impossible within the compass of a short article to deal with the multitude of experiences which may appear as factors in mental disorder, more particularly in the neuroses. The various situations may most conveniently be considered in relation to the age periods at which they most commonly operate. It must be realized, however, that all mental symptoms are reactions of personalities. In a previous article an attempt has been made to describe some morbid types of personality. Some individuals may be specially vulnerable to certain environmental psychological factors, for example, the naturally sensitive person is liable to become depressed or even to display paranoid trends should he be faced with criticisms. Mental symptoms are the resultants of personality and situations.

### Infancy.

The young organism is naturally receptive and readily moulded by both physical and mental environmental influences. To an increasing extent the various methods of infant and child training designed primarily to inculcate good physiological habits are also taking into consideration the paramount importance of the child's emotional environment. Much has been done to improve the material conditions under which children are being brought up, but much remains to be achieved in the way of providing a healthy mental atmosphere in homes of all classes of society, not least in those of the well-to-do. It has been well said that what the child needs most of all is the feeling of security. Emotional tension within the home, lack of orderliness and inconsistent discipline are conditions which most often seem to lay the foundations for later neurosis. It is these often repeated causes for emotional upsets in the child which are infinitely more potent factors in neurosis than any isolated incidents or the sexual traumata which used to be alleged by the Freudian school. The fussy, over-anxious mother is liable to do more emotional harm to her child than the one who is neglectful. But the craving for affection exists from the tenderest age and the unwanted child is liable according to his temperament to gain compensation by perverse behaviour or by the construction in phantasy of a substitute parent. With too wide spacing between children, an older child may display various forms of jealousy reactions towards a recent arrival. The singling out of a child for special attention or privileges on account of illness or for some other reason may also evoke jealousy reactions from other members of the family. The youngest child runs the greatest risk of being "babyied" and thereby of suffering some lack of character development. Somewhat allied to this situation is that of dominant, aggressive or over-protective parent and unduly submissive child, noted by Kasanin in the United States of America and by McGeorge in Australia. In view of the frequency with which children with schizophrenia appear to have one or other parent of that type, McGeorge has coined the phrase "schizogenic parent". One may ask, however, whether these "schizogenic" qualities in the parent are not evoked by the character defects which became so early apparent in the subjects of future schizophrenia, and after all one does not often meet with more than one case amongst a number of siblings. In all probability a person's attitude towards authority is laid down in the cradle. While, of course, one may not overlook inborn factors of temperament, there is not a little truth in the Freudian doctrine that neurosis develops out of the prohibitions unwisely imposed by adults upon infantile sexual behaviour. But one need not limit the situation to supposed sexual behaviour. Infant and child training are directed essentially towards the guiding of egotistic tendencies into altruistic (social) channels. Therefore any conflict of authority which is handled too strictly, or inconsistently and without the realization that the child may often fail to understand what is expected of it, is only too likely to lead to a sense of inferiority, resentment or rebellion and perhaps to a serious warping of character formation. Less frequently the child may be subjected to the influence of parents or other adults who are not only unwise but actually mentally defective, psychopathic or immoral. Morbid anxiety, hypochondria and hysteria in children are sometimes the reflection of similar trends in a parent.

### Childhood and Adolescence.

Although the causes of maladjustment are so often traceable to infancy, neurotic and other undesirable tendencies may not be manifest or become serious until the school period. Because of its profound truth, one may recall the often repeated dictum of the Jesuits concerning the impressionability of the first seven years of life. It so often happens that it is not until the child goes to school that the parents are made aware of quite high degrees of mental deficiency, as well as of social maladjustments, although with the multiplication of public nurseries and playgrounds for children under the supervision of trained staffs, "problem" and "difficult" children are more readily being recognized and dealt with at an early age. It may be mentioned in passing that educational retardation, causing a child to drop not more than two years behind the average, may result not only from physical disabilities, such as ill health or defects of sight and hearing, but also from such emotional factors as tension at home, unhappiness in social contacts at school, antagonism towards the teacher and the distractions of pleasurable and perhaps forbidden activities outside school hours. Other factors of a more physical order, in so far as they cause physical and mental exhaustion, are insufficient and irregular meals at home, insufficient sleep, and the performance of chores before going to school. Anything which lessens the appeal of the school to the child, whether it be his own dulness or some external factor, is an encouragement to truancy and may point to the road which leads to delinquency and criminality. But here again it must be admitted that defective discipline at home, whether through parental indifference or a home broken by separation or death, is the all-important factor, and unless the school or other agency provides the necessary remedy, the child is indeed doomed to become a social

liability. Gradually, but all too slowly, the educational system is breaking away from the long tradition of the "three R's" and is providing training for the various vocations, and above all for domestic responsibility and for citizenship. So many of our neurotics, and not only they, are ignorant of the art of living and devoid of intellectual resources.

### Adolescence.

Adolescence is a period of profound physical changes and of new social adaptations. The ripening of the sexual instinct and the urge to greater self-expression, assisted by emancipation from home influences, permitting a greater degree of personal freedom, must be tempered by the ever-widening range of obligations to the rest of the community. Significantly the incidence of insanity, of delinquency and doubtless also of neurosis shows a steep rise between the ages of fifteen and twenty-five years. The most important problem of this period is the selection of the vocation best suited to the worker's intellectual or manual abilities and to his temperament. The selection of a profession really to gratify parental ambition rather than because of the aptitude of the adolescent may lead to disaster. At this age, too, a natural cocksureness and sense of self-importance are liable to come into conflict with parental authority should the attitude of the older generation remain too conservative, protective or jealous.

The extension of heterosexual interests provides an additional set of problems for the adolescent whose attitude in this respect also is conditioned by earlier training. The shy, reserved individual with a sense of limited social gifts may suffer acutely over difficulties in associating with the opposite sex. For one reason or another there may be a "fixation" upon a parent (the so-called Œdipus and Electra complexes) which may in part be responsible for such difficulties, including the failure to attain a satisfactory adaptation to marriage.

### Marriage.

It is often necessary to point out to those who complain of marital difficulties that a satisfactory symbiosis depends on a mutual adjustment as regards not only sex, but also parental, intellectual and social interests. Above all does the word "mutual" need to be emphasized. Rarely quite a tolerable partnership may develop between a dominant and a dependent personality, when there may exist almost a parent-child relationship. The spoiled child of either sex is apt to enter on the marital state with little idea of compromise in matters of differing urges and interests. As regards sexual incompatibilities so largely stressed by the Freudian school as factors in neurosis, one more often finds that *coitus interruptus* and the like are no more than aggravating experiences. Almost invariably there is clear evidence of previous neurosis as well as of maladjustment in other directions. Impotence and frigidity, on the other hand, are conditions for which the frustrated partner may find it impossible to attain satisfactory compensations.

Reduction in the size of families and the development of mechanical devices both tend to give the housewife greater leisure which may not prove an unmixed blessing to the person with a limited intellectual horizon. And the pursuit of a stereotyped routine of amusement may be no less conducive to boredom and to actual neurosis. Here again the fault lies with the individual rather than with circumstances. A woman may be in need of a hobby which will give her opportunity for self-expression, no less than a man. Most people find some interest which may prove a temporary retreat from the petty irritations of life. We must see to it that this retreat does not mean a flight into neurosis.

### Occupation.

A man may be unsuited to his occupation by reason of his intellect, temperament, natural inclination or because of the lack of some special ability or skill. The widening of choice through education and improved means of transport and the call of the city have not proved unmixed blessings, especially for the so-called labouring classes. In the days when a youth had no other alternative but to follow in his father's footsteps or at least to remain in the district in which he was born, the very absence of choice tended to promote mental stability. The price of independence is the increase of neurosis amongst the not inconsiderable proportion of the community unfitted for it. On the other hand new compensating factors are constantly being introduced and amongst these is the more scientific selection for vocation. Unemployment is prone to lead to unemployability. There is the economic problem of the "dead end" job into which a youth may be forced because of the necessity for wage earning at the first opportunity. Stresses which are traceable to defective factory hygiene and working conditions cannot be covered in a few words. They may be suspected when the sickness rate amongst employees rises or is unduly high. Isolated cases of neurosis such as morbid fatigability and so-called nervous debility call for inquiry into personal factors. There may be some friction in the relationship with workmates or superiors, in fact a conflict of personalities. Most often the alleged occupational factors prove to be a disguise for worries which are essentially domestic, or which have arisen in some other sphere unconnected with work.

### Involution and Retirement.

Least of all during the later years of life is it possible to consider external psychological factors without reference to changes in the psycho-physical disposition. The psychology of involution has been most admirably summarized by Bernard Shaw in "Heartbreak House":

> Captain Shotover: A man's interest in the world is only the overflow from his interest in himself. When you are a child your vessel is not yet full; so you care for nothing but your own affairs. When you grow up, your vessel overflows; and you are a politician, a philosopher, or an explorer and adventurer. In old age the vessel dries up: there is no overflow: you are a child again. I can give you the memories of my ancient wisdom: mere scraps and leavings; but I no longer really care for anything but my own little wants and hobbies.

Involution consists of a slowing down of the psychic tempo, reduction of activity, a narrowing of interests and increasing conservatism and egocentricity. Some persons can grow old gracefully, content to exercise a mellow judgement, while others lament their missed opportunities and struggle in vain against the limitations of advancing age. The organism, if it is to continue to function healthily and with comfort, must find a new level of adaptation, involving restriction of diet, of libido and of social responsibilities. According to the individual psycho-physical make-up involution may occur at any period within two, three or four decades. An unequal rate of decline of bodily and mental vigour may give rise to a number of situations which call for psychiatric handling.

Retirement need not mean an empty life for either man or woman. He is wise who has provided against the day by acquiring a suitable range of interests which will fill some of the hours hitherto devoted to earning a living. The woman who has guided her family up to independence must be content to resign her authority and even to find a new outlet for her maternal feelings. How often the hard-working man and the devoted mother, after years of absorption in their respective responsibilities, seem to "go to bits" when their life's task is completed and drift into hypochondria! Education in the process of growing old and advice on the finding of adequate compensations play an important part in the treatment of the neuroses of this period.

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# British Medical Association News.

## SCIENTIFIC.

A MEETING of the South Australian Branch of the British Medical Association was held on February 29, 1940, at Adelaide.

### Difficult Labour.

DR. F. L. WALL read a paper entitled "The Recognition and Treatment of Difficult Labour" (see page 77).

DR. BRIAN SWIFT, in opening the discussion, expressed his appreciation of Dr. Wall's paper. He said that Dr. Wall had built up his paper from his own practical experience and not from text-books, and that therefore it was calculated to make his audience think. Dr. Wall had covered an enormous amount of ground in his paper, and he had obviously spent a great deal of time and had taken great care in its preparation.

Dr. Swift then said that in 1926 he had listened to an address by De Lee, at the centenary celebrations of the Coombe Maternity Hospital in Dublin. Dr. Swift thought that the new Director of Obstetrics of South Australia was there at the time as assistant master. De Lee described pregnancy as a disease of nine months' duration which was followed by an operation, the labour. He went on to say that all labours were difficult, as they nearly all resulted in some trauma to the mother. The labour was really a severe operation; and therefore not only must they be prepared for it, but also much forethought must be given to the patient's condition before this operation of labour took place, namely, during the pregnancy. Dr. Swift said that Dr. Wall in his paper had stressed the fact that this preparation, which was called antenatal care, began as soon as the woman became pregnant, and that it was really divided into two parts: first, they had to gain the woman's confidence, and secondly, they had to discover and treat, if possible, any physical abnormality. With regard to the first requirement, the patient herself played the greater part. If she had made up her mind that in the event of her ever becoming pregnant one particular doctor was the only one to look after her, then his battle was over and labour would most probably proceed with smoothness. However, it was with the patient whose confidence they had to obtain that sometimes they were apt to err by overdoing the antenatal care; too many complete examinations were made and the patient began to think that perhaps she was abnormal or that something was not quite right. She unfortunately then thought that she must help her attendant in every way, and when she came into labour she told him of every little symptom and pain. This became most annoying and trying. Dr. Swift thought, therefore, that they ought not to overdo this mental preparation.

Dr. Swift then referred to difficult labour. He said that he had always taught students to think of any labour in terms of "the three P's". He always asked himself, when confronted with a long labour, what was wrong with "the three P's"—namely, the powers, the passages and the passenger. He would discuss under these headings several points that had been raised, beginning with difficulties due to the powers.

Dr. Wall had mentioned primary uterine inertia. Dr. Swift agreed that most of the drugs that had been advocated for that condition did not seem to act when tried in a genuine case. He laid stress on the necessity for continued auscultation of the fœtal heart during these long labours. They were apt to consider the mother most of the time and forget the child; the mother was given ample drugs to secure rest for her, and then after days of labour they delivered the child, only to find that it was dead. Dr. Swift was convinced that Cæsarean section was the best treatment in true primary inertia, and that it should always be performed as soon as the fœtal heart rate began to alter. At the other extreme they had what Dr. Wall had called the frenzied uterus—namely, violent uterine contractions which, if allowed to continue, would cause the uterus to rupture. When that condition arose (and luckily it arose slowly), the uterus had to be emptied in the most conservative manner. The lower uterine segment became thinned out, and any intrauterine manipulations were fraught with the danger of rupturing the uterus. The immediate treatment was the administration of morphine and an anæsthetic so that the contractions of the uterus could be stopped. The patient was taken to hospital, an anæsthetic if necessary being administered all the time; and then the child was delivered either by forceps if it was alive or by craniotomy if it was dead. Lower segment Cæsarean section could always be performed if the child was alive, even if several vaginal examinations had been made beforehand. Dr. Wall had read to them several paragraphs from a book on Cæsarean section by Mackintosh Marshall, and had expressed his surprise at the results which were claimed by the writer. Dr. Swift had had quite a number of cases in which a lower segment Cæsarean section had been performed with satisfactory results to both mother and child. Three cases came to his memory. One patient had been admitted in January to the Queen Victoria Maternity Home with a temperature of 103° F. She had been in labour for three days with the fœtal head above the pelvic brim, and had had several vaginal examinations. A lower segment operation was performed, with the result that mother and child lived. Another patient had been in labour three days and was threatened with rupture of the uterus. She had been sent to hospital, a distance of more than twenty miles, in an ambulance, and the nurse had been sent with her to give her a few drops of chloroform to stop rupture of the uterus. A lower segment operation was performed with satisfactory results to both mother and child. Another patient was a *primigravida*, aged forty years, and the fœtus was presenting by the breech. When labour commenced the membranes ruptured at once and a leg was pushed into the bed. Dr. Swift cleaned the leg with mercurochrome and performed a lower segment operation. The patient stood the operation well and the child was born alive. Surely without the lower segment operation in cases of that type both mother and child would have been lost. Dr. Swift advocated the more frequent use of that operation in cases of that type in the presence of infection or potential infection.

Dr. Swift then spoke of difficult labour due to the passages. He endorsed Dr. Wall's statement about a trial of labour when there was a doubt as to whether the child could be born; often the labour terminated quite easily, provided time was given for the head to be moulded. With regard to the induction of labour when the patient had a small pelvis, Dr. Swift said that his experience was that medical induction usually failed if the patient had not reached term, whilst at term it was usually very effective. Dr. Swift asked Dr. Wall why he did not use pituitrin at his first attempt at induction. Dr. Swift was certain that far too many inductions for contracted pelvis were done in Australia. If the time taken in the second stage of labour was noted in those induction cases, it would be found that the second stage was usually quick; that showed that there was plenty of room and that the induction was unnecessary. Dr. Swift also asked Dr. Wall why he had said that he would perform a Cæsarean section on a middle-aged *primigravida* who had had dyspareunia; surely an episiotomy would do.

Dr. Swift then discussed difficulties due to the passenger. He said that the most annoying and difficult type of case was that in which there was a persistent occipito-posterior presentation. He was always suspicious of the right occipito-anterior positions; he had often noticed that when before labour the position had been diagnosed as right occipito-anterior it eventually became posterior. He thought that that was due to the fact that the face of the child was unable to rotate posterioriy on account of the rectum. He had often put on Buist pads at the commencement of labour to help the occiput to rotate forwards. Dr. Wall had advised manual rotation, and with that treatment Dr. Swift heartily agreed; but he thought Dr. Wall had made its performance appear easy. They had all had cases in which they had rotated the head, applied forceps, and then found that the occiput had rotated back again. To stop the rotation back again Dr. Swift applied a tenaculum or artery clip to the child's scalp after he had rotated the head, and then asked the nurse to hold the tenaculum while he applied the forceps. At the present time he usually used Kielland's forceps in posterior presentations, and it was remarkable how easily the head could be rotated with those forceps and then extracted.

Dr. Swift finally spoke on breech delivery. Before an attempt was made at delivery in an arrested breech presentation the position of the breech had to be determined. That could usually be done by abdominal palpation, under an anæsthetic if necessary. A plan of campaign must then be worked out. The hand that would have to be used and the foot that would need to be sought for had to be decided upon, so that the extraction could be carried out with the minimum of intrauterine manipulations. If the wrong hand was used or if the wrong foot was brought down, then the medical attendant found himself in difficulty. Dr. Swift therefore made a plea for more frequent abdominal palpation during labour, if necessary under anæsthesia. If this was done vaginal examinations could be wholly eliminated. The diagnosis of the presentation and position had always to be made most carefully, and in the majority of cases the diagnosis could be made by palpation. Very often some operative treatment was started before the doctor was absolutely certain that his diagnosis was correct. If he was not certain he should give the patient an anæsthetic and make certain. Then, having made his diagnosis, if he did not know the treatment he should make some excuse and

go home and read it up. Dr. Swift urged those present on no account to attempt operative interference without knowing exactly what they were attempting to do, for once they had carried out some intrauterine manipulation and failed to extract the child, the chances that anyone else would be able to help them were remote.

DR. ROLAND BEARD thanked Dr. Wall for his paper. He said that he knew Dr. Wall well enough to be sure that he had taken great pains to ascertain his facts. With regard to primary inertia, Dr. Beard called it "the stuttering uterus"—perhaps a fanciful term; but in his opinion it covered the disordered and ineffectual uterine contractions that characterized the condition. Dr. Beard then referred to the nurse in attendance. He said that these nurses should be trained to observe the patient sufficiently carefully to be able to judge whether she had reasonably normal uterine contractions with the pain she suffered; the nurse should be able to give the obstetrician over the telephone information that would allow him to know that primary inertia might be present. During uterine contractions in primary inertia the consistency of the uterus was like rubber sponge; the normal uterus had a hard rubber-like resistance. In primary inertia it had to be realized that the child might be of average size or might be large, and this circumstance had a significant effect on management; moreover, the patient might be elderly, and possibly a small posterior cervical fibroid growth might be present.

Dr. Beard then referred to fibroid tumours associated with pregnancy. He said that he had recently encountered a case in which he had refused to interfere on three separate occasions during gestation, on the plea of possible obstruction and pain. The pregnancy had ended normally at full term. Dr. Beard had since removed by myomectomy a right cornual growth the size of a large grapefruit. In facial presentations Dr. Beard considered that the face did not rotate three-eighths of a circle, just as the occiput failed to rotate, and for the same reason: the denominator was "off" the rotator floor throughout the labour.

With regard to transverse presentations, Dr. Beard thought that an X-ray examination was valuable; occasionally the fault might be due to the child's being abnormal. Dr. Beard had encountered such a case recently. Breech presentations in which the aftercoming head gave trouble were often successfully treated by the use of forceps, as Dr. Wall had suggested. Dr. Wall's kind mention of Dr. Beard's principles in occipito-posterior presentations were greatly appreciated, especially as the reference came from someone in Dr. Beard's home town. Dr. Beard finally referred to Dr. Swift's suggestion that the abdomen should be examined in labour with the patient under anæsthesia and without a vaginal examination. He thought that the suggestion was good, in certain cases.

DR. JOHN J. LAING said, with reference to the necessity for induction of labour in cases of disproportion, that he was a strong advocate of the Kerr-Muller method of estimating the correct time; by this he meant the judging of just how much overlapping at the brim was allowable before labour was induced. He thought that when the measurements of the pelvis were deficient, pointing either to a generally contracted pelvis or to a flattened pelvis in a *primipara*, routine weekly examinations should be carried out commencing at the thirty-fourth week. An anæsthetic might be necessary. If the head fitted well into the pelvis at the thirty-fourth week the patient should be examined at weekly intervals until term. The first day on which the head failed to fit in was the day on which to induce labour. These remarks applied only to cases in which the true conjugate was such that Cæsarean section should obviously not be carried out without trial of labour.

Dr. Laing then spoke of true primary uterine inertia. He said that many patients were left day after day; they were given repeated doses of morphine and little or no progress was made. In obvious cases of primary inertia the patient should have morphine or morphine and scopolamine on the first night to ensure a comparatively restful night, and the following day she should "work", receiving no morphine. In the evening a further injection was allowable, to give her a night's rest; but again on the next day she must work. When the obstetrician had by this time satisfied himself that he was indeed dealing with a true case of primary uterine inertia, stimulation should be used. Dr. Laing's method was to give two or three minims of pituitrin every quarter of an hour up to one cubic centimetre, watching the reaction and progress carefully. He thought that the mistake made regarding stimulation was that it was left too late and the patient was exhausted. The response in such cases was poor.

Referring to persistent occipito-posterior presentation, Dr. Laing said that many practitioners talked glibly about rotating the head. He himself on many occasions had found it an extremely difficult, if not an impossible feat. Again, in such a large percentage of cases the head rotated of its own accord or with the application of forceps that he did not waste much time in an endeavour to rotate the head, but applied forceps to the pelvis, irrespective of the position of the fœtal head. In the majority of cases rotation took place; if it did not, then delivery was accomplished without rotation. The worst that could happen was a complete tear. A complete tear was not, of course, to be taken lightly; but when it was properly repaired it was not such a calamity as one might suppose. Dr. Laing said that perhaps he had not had experience of so many occipito-posterior presentations as some of those present; but he could not recall a case in which he had failed to effect delivery.

Dr. Laing went on to speak of Dr. Wall's remarks about gas anæsthesia. If Dr. Wall was referring to Minnitt's apparatus, Dr. Laing thought it very unsatisfactory. Even if the air-holes were stuffed with cotton wool, if the unfortunate woman was using the apparatus herself, her contraction and pain had come and gone before she had come under the influence of the anæsthetic. Finally, Dr. Wall had said that he applied forceps as a routine measure to the aftercoming head in all cases of breech presentation. Dr. Laing could not agree with this. Dr. Wall had given as his reason for this procedure that he did not want to waste time trying methods that might fail. Dr. Laing thought that one might count on five minutes. There were so few cases in which, when delivery was skilfully carried out, the obstetrician failed to deliver the aftercoming head that he would be sorry to teach forceps delivery as a routine method. He did, however, advocate that in all cases of breech presentation forceps should be to hand, sterilized and ready for use if necessary.

# Naval, Military and Air Force.

## APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 130, of July 11, 1940.

### CITIZEN NAVAL FORCES OF THE COMMONWEALTH.

### Royal Australian Naval Volunteer Reserve.

*Promotion.*—Surgeon Lieutenant James Matthew Banks is promoted to the rank of Surgeon Lieutenant-Commander, dated 15th June, 1940.

### AUSTRALIAN MILITARY FORCES.

#### NORTHERN COMMAND.

#### First Military District.

*Australian Army Medical Corps Reserve.*

*To be Honorary Captains*—Loic Reginald Boys and Edgar Grove Free, 12th June, 1940, and 14th June, 1940, respectively.

*To be Honorary Captains*—Dacre de Vaux Weedon, Ivan Gregory Hooper and Norman Joseph O'Connor, 19th June, 1940.

#### EASTERN COMMAND.

#### Staff.

Lieutenant-Colonel A. M. McIntosh, Australian Army Medical Corps, is appointed Assistant Director of Medical Services, Eastern Command, 23rd May, 1940, *vice* Major (Temporary Lieutenant-Colonel) S. H. Lovell, seconded to the Australian Imperial Force.

#### Second Military District.

*Australian Army Medical Corps.*

*To be Majors (temporarily)*—Captains C. G. Champion, H. M. Owen, D. A. S. Fraser, G. M. Blaxland, W. H. Kellett and W. A. Hugh-Smith, 12th June, 1940. *To be Captains (provisionally) supernumerary to establishment pending absorption*—John Maxwell Oldham, Peter Ian Alexander Hendry, Alex Keith Barrett, Eben Hamilton Hipsley, Herbert Leslie Hughes, Sandy Edwin John Robertson and Leslie Parker Hiatt, 29th May, 1940; Richard Lloyd Cahill and Leonard Arthur Atkins, 5th June, 1940; Captain (provisionally) W. A. Conolly is brought on to the authorized establishment, 22nd April, 1940; the resignation of Captain (provisionally) C. G. Davidson of his commission is accepted.

*To be Captains (provisionally)*—David Norrie Fleming Leake, 17th April, 1940; Stanley Jack Marcus Goulston, 6th May, 1940; and John Victor Latham, 21st May, 1940. Lieutenant-Colonel A. M. McIntosh is appointed from the Reserve of Officers (A.A.M.C.), 23rd May, 1940.

*Australian Army Medical Corps Reserve.*

*To be Honorary Captain*—Sidney Brookes Clipsham, 13th June, 1940.

SOUTHERN COMMAND.

**Third Military District.**

*Australian Army Medical Corps.*

*To be Temporary Colonel*—Major (Temporary Lieutenant-Colonel) the Honourable A. E. Colvin, C.B.E., M.C., whilst holding the appointment of Assistant Director-General of Medical Services, Army Headquarters, 11th April, 1940. Captain N. P. Long is brought on the authorized establishment, 19th May, 1940; Honorary Captains N. Murdoch and K. H. Macfarlane are appointed from the Reserve of Officers (A.A.M.C.), and to be Captains (provisionally) supernumerary to establishment pending absorption, with regimental seniority next after Captain (provisionally) T. H. Steel, 8th June, 1940.

*To be Temporary Colonel*—Temporary Lieutenant-Colonel E. L. Cooper, 21st January, 1940. *To be Captain (provisionally)*—Thomas Heron Steel, 5th June, 1940.

*Australian Army Medical Corps Reserve.*

The appointment of Honorary Captain M. H. B. Robinson is terminated 30th April, 1940.

*To be Honorary Colonel*—Captain (Honorary Major) Sir H. A. S. Newton, 16th May, 1940. *To be Honorary Captains*—Gordon Carlyle Marshall, Noel Marston Willsmore, James Walter Hickey and Vernon Malcolm Cross, 10th June, 1940, and Philip Graham Commons, 13th June, 1940. The appointment of Lieutenant-Colonel (Honorary Colonel) T. E. V. Hurley, C.M.G., V.D., is terminated, 3rd June, 1940.—(Ex. Min. No. 134—Approved 10th July, 1940.)

WESTERN COMMAND.

**Fifth Military District.**

*Australian Army Medical Corps Reserve.*

*To be Honorary Captain*—Ronald Barrington Knight, 10th June, 1940. The resignation of Honorary Captain D. B. Skewes of his commission is accepted.

ROYAL AUSTRALIAN AIR FORCE.

**Citizen Air Force.**

*Medical Branch.*

The following are granted commissions on probation with the rank of Flight Lieutenant with effect from the dates indicated: John Anthony Bond, M.B., 10th June, 1940; William Frederick Hamilton Crick, M.B., B.S., 12th June, 1940; Archibald James Campbell, M.B., B.S., D.T.R.E., 18th June, 1940; and William Chalfont Holley, M.B., B.S., 24th June, 1940.

## Obituary.

### ALBERT ERNEST FFROST.

WE regret to announce the death of Dr. Albert Ernest Ffrost, which occurred on June 28, 1940, at Melbourne, Victoria.

### PATRICK JAMES FLANAGAN.

WE regret to announce the death of Dr. Patrick James Flanagan, which occurred on July 14, 1940, at Melbourne, Victoria.

### CHARLES HAROLD JOHNSON.

WE regret to announce the death of Dr. Charles Harold Johnson, which occurred on July 17, 1940, at Melbourne, Victoria.

### ADELA PORTER.

WE regret to announce the death of Dr. Adela Porter, which occurred on July 18, 1940, at Taringa, Queensland.

## Nominations and Elections.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Alexander, John Murray, M.B., B.S., 1937 (Univ. Sydney), 4, Tryon Avenue, Wollstonecraft.

The undermentioned has applied for election as a member of the Tasmanian Branch of the British Medical Association:

Bevan, Louis Lancelot Oxley, M.B., B.S., 1936 (Univ. Melbourne), New Norfolk.

## Books Received.

THE TUBERCULIN REACTION. AN INVESTIGATION INTO A STANDARD TECHNIQUE FOR DETERMINING TUBERCULIN INDICES AND THE APPLICATION THEREOF TO A RURAL POPULATION GROUP IN JAVA, by I. B. Liong; 1940. Batavia: The Children's Department of the Medical College. Royal 8vo, pp. 206, with illustrations.

## Diary for the Month.

AUG. 1.—South Australian Branch, B.M.A.: Council.
AUG. 2.—Queensland Branch, B.M.A.: Branch.
AUG. 6.—New South Wales Branch, B.M.A.: Organization and Science Committee.
AUG. 7.—Victorian Branch, B.M.A.: Branch.
AUG. 7.—Western Australian Branch, B.M.A.: Council.
AUG. 9.—Queensland Branch, B.M.A.: Council.
AUG. 13.—Tasmanian Branch, B.M.A.: Branch.
AUG. 13.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
AUG. 20.—New South Wales Branch, B.M.A.: Ethics Committee.
AUG. 21.—Western Australian Branch, B.M.A.: Branch.
AUG. 22.—New South Wales Branch, B.M.A.: Clinical meeting.
AUG. 23.—Queensland Branch, B.M.A.: Council.
AUG. 27.—New South Wales Branch, B.M.A.: Medical Politics Committee.

## Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

*New South Wales Branch* (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

*Victorian Branch* (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

*Queensland Branch* (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associate Friendly Societies' Medical Institute; Proserpine District Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

*South Australian Branch* (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

*Western Australian Branch* (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

## Editorial Notices.

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